Pests

AND THEIR CONTROL

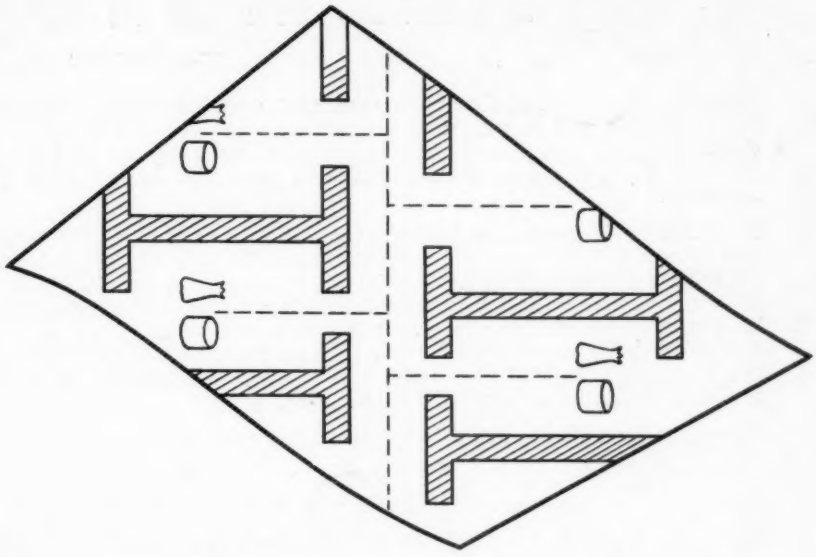
1945

MAY

VOL. 13 NO. 5

ORGAN OF THE PEST CONTROL INDUSTRY

Exterminators
Fumigators
Termite Control Operators
Entomologists
Insecticide and Supply Mfgrs.



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"Contributed articles in this publication do not necessarily reflect the opinions of the editors. The editors invite discussions, comments and all types of literary material pertaining to pest control and pests from any person interested in the advancement of the field."

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EDITORIAL

Chaotic Or Fair Price Structure After V-E Day?

ONE OF THE MOST important factors confronting the PCO after the war will be consideration of pricing of his services to the public.

During the past few years while war prices have sky-rocketed, materials have increased in prices, and labor and wages have set a new record, all of which have more or less helped keep the prices together and probably will till V-E Day. But, what about the situation after the war? Will PCO's return to their former practices? Will they try to outdo their competitors and will they be fenced in? These are questions that should concern every PCO.

It is the belief of "Ye Ed", based on past experience, that while some may feel justified in doing so, it is absolutely unnecessary since this practice would not help matters, but rather, do more harm than is even realized.

If every PCO is to profit and benefit by what has been already accomplished in maintaining a reasonable price structure for service to the public, then every PCO must hold the line vigorously and courageously against such former practices. In order to maintain generous, fair and just profits, PCO's must determine to forego what it takes to operate their business as they have during the war years as far as prices are concerned. In other words, to continue to maintain public respect and confidence that is so vital and important to all businesses no letdown is to be brought about. Rest assured that once the bars are let down on prices, disaster is certain, not only to the PCO but to the industry as a whole.

Since our profession has received recognition from Government Officials and the public as a highly organized profession, rendering service to mankind, remember that it doesn't take much to tear down what has taken years to build.

Unlicensed Fumigators

DESPITE THE FACT that many cities and states have laws making it compulsory for fumigators to be licensed, instances continue to crop up of unlicensed fumigators doing service work.

Obviously, these illegal activities are not likely to be in the public or Industry interest. It is suggested, therefore, that when such cases come to your notice that you ascertain all the facts, sending them to your local association and the national as well, for appropriate action.

Elsewhere in this issue is published a brief item referring to the apprehension of unlicensed operators in Arkansas.

Publicity Antidote

REPORTS OF DEATHS allegedly caused by PCO neglect or inefficiency continue to appear in the public press. Take for example a recent item in The Newark (N. J.) Evening News which imputed the accidental ? death of a 5-year-old boy to rat poison placed in his home by a PCO; when, as a matter of fact, an autopsy revealed that death had been due to meningitis.

Thanks, however, to the alert efforts of a disinterested PCO the autopsy report was called to the attention of the editor, the editor published a retraction and the effects of the original publicity were neutralized.

What of the future? It doesn't take an Einstein to realize that unless items of the sort are speedily corrected, respect that the Industry has built up the hard way will suffer. One way the PCO can help is by promptly sending all such clippings to the National Pest Control Association for analysis and advisable procedure. Another, and it cannot be emphasized too often or strongly, is for the PCO to practice safety—first, last and always in his control operations.

Research Findings

Some Effects of Phenothiazine, Phenothiazone and Thionol on Periplaneta Americana—By John Wm. Zukel, Iowa State College, Ames.

Summary.—1. Phenothiazine, phenothiazone and thionol were tested for their toxic effect on, and internal distribution in the American cockroach, **Periplaneta americana (L.).**

.2. Phenothiazine, phenothiazone and thionol are not toxic in the alimentary canal. The lack of toxicity of phenothiazine and phenothiazone is due to the impermeability of the intestinal wall to these compounds. Phenothiazine, phenothiazone and thionol are converted to a compound which gives the reactions for leucothionol during passage through the midgut.

3. Phenothiazine and phenothiazone are toxic in contact with the cuticle and when injected into the haemocele. Thionol is not toxic under the same conditions.

4. The toxic action of phenothiazine and phenothiazone is produced by a leucothionol conjugate formed from the compounds. The conjugate must reach a definite concentration in the haemolymph before the insect succumbs. A sub-lethal concentration produces an uncoordinated walk and the insect recovers as the conjugate is eliminated through the Malpighian tubules.

5. Phenothiazine particles of the smallest size kill the insect in the shortest time with the least quantity in contact with the cuticle.

6. The toxic action of phenothiazine and phenothiazone may be due to the inhibition of the respiratory enzyme, cytochrome oxidase.—9-7-44.

—*Jour. Econ. Ent., Vol.* 37, *No.* 6, *Dec.*, 1944.

Does Your Copy of Pests Arrive Late?

If so, please remember, wartime transportation is subject to frequent and unforeseen delays. Late delivery of your copy of Pests means that your area has been affected. Pests magazine is still being printed and mailed on its regular schedule, and we shall continue to endeavor to get your copies to you on publication date.

Reprints of Articles

Requests have been made from time to time relative to reprints of articles being available. This publication will make possible reprints of any article in this issue if orders are received within 10 days of receipt of this publication. Charges are based on the length of the article.

The Third Annual Canadian Pest Control Operators Conference An Outstanding Success

SPONSORED BY THE University of Montreal, with the co-operation of the Canadian Pest Control Operators Association, the Third Canadian PCO's Conference drew a record of attendance. The total registration was 139, as compared with 95 at the 1944 Conference. Indicative of the rising interest which these short courses are creating is the fact that there were 68 who attended for the first time. On the other hand, 34 came for the second and 37 for the third time.

The Conference was officially opened by Dean A. Leveille, of the Faculty of Science. He expressed the deep satisfaction of the University Authorities at being able to cooperate in some way in raising the standards of the Pest Control Industry and more particularly so on the scientific standpoint. Mgr. Olivier Maurault, Rector of the University of Montreal also said a few words of greetings to the members assembled.

P. W. McLeod, President of the Canadian Pest Control Operators Association, who was acting as chairman of the opening session, thanked the University Officials for their hospitality and hoped that the Pest Control Operators would derive all the benefit which the opportunity offered by following carefully all the sessions, listening attentively to all the papers and contributing in all discussions.

President Theodore Oser, National Pest Control Association, then delivered an address in which he represented the "Pest Control Industry at the Crossroads". He invited the Pest Control Operator to stop and study the future and decide which of the roads he wanted to choose. He described what lay along the three roads, the Wrong, the Middle and the Right, and he gave a clear vision of the various situations which one may expect to find at the end of each road.

Dr. D. V. Currey, Medical Officer of Health, City of St. Catharines, Ontario, spoke of the relations which should exist between the MOH's and the industry members. He insisted on the educational work which must be done so as to make the general public more pest control conscious. He also touched the legal aspect of pest control and said that the Medical Officer of Health had also to mind for the safety of the public while pest control measures were being applied. He cited some regulations as applying to fumigating operations and congratulated the Association for having adopted the fumigation code known as "Good Domestic Fumigation Practices" as prepared by the National Pest Control Association.

There was then given a demonstration of the "Dusting Tower" method of testing roach powders by E. R. Bellemare and laboratory assistants. The afternoon and evening sessions of February 19th were given over to papers and discussions on fumigation. Dr. George H. Chapman reviewed the various fumigants used in fumigation of buildings. J. Carl Dawson spoke on "Warehouse Fumigations with Methyl Bromide" while H. A. U. Monro discussed box-car fumigation. Bartlett W. Eldridge then invited all the members to try and solve a series of problems which he placed before them and relating to fumigation with methyl bromide.

He also reviewed what he called "Fumigation Headaches". These headaches included some problems of applying calcium cyanide indoors for rodent control, fumigation accidents, legislations in their relation to fumigating operations, and insurance limitations.

A lengthy discussion followed the paper delivered by Howard Hutchison on insurance. Howard Hutchison of the firm Lukis, Stewart & Co. Ltd., Insurance Brokers, had spent much of his time during the past year in preparing special coverages which could protect the Pest Control Operator in all his liabilities toward the public, property, and employees.

William O. Buettner, who had been active throughout the fumigation session, offered a few comments on the "NPCA Safety Program". One of the interesting features of the fumigation session was a demonstration on the "Importance of Proper Ventilation". Three bell jars were set on a table and each contained a small pillow. HCN was released under each bell jar by the usual pot method, on a small scale. After allowing the gas to penetrate the pillows, one was placed in the cold, outside of a window, another one was left to stand on the table at room temperature and the third was slightly beaten. After a time, the three pillows were placed back under the bell jars and a rat introduced with each. In a matter of seconds, the rat which had been placed with the cool pillow collapsed. Shortly after, the second rat, that in the vicinity of the unbeaten pillow, also died. As for the third rat, whose pillow had been slightly beaten, he also collapsed, but quite a while after the other two. This last rat could however be revived after having been given artificial respiration for close to half an hour.

The Tuesday morning session included three papers the first of which, by Father O. Fournier, explained the behaviour of insects under the effect of various stimulations. Father Fournier had prepared and gave a demonstration on insect tropisms, illustrating the effect of light and temperature. Dr. F. O. Morrison, MacDonald College, outlined the "Principles of Economic Entomology" and this was followed by a paper on "Silverfish, Firebrats and their Control" by the man who has been proclaimed as the one who probably knows the most on these insects, Dr. H. L. Sweetman, Massachusetts State College.

The entire afternoon and evening sessions were given to DDT. The subjects as developed proved to be of an outstanding interest throughout. Dr. C. R. Twinn talked of the possible uses of DDT by the PCO, while W. A. Ross, Vineland (Ontario) Dominion Entomological Laboratory, reviewed its limitations. Dr. H. L. Sweetman reported on experiments made on the Effects of Physical Environment of this new chemical. The whole subject was summed up by William O. Buettner, and then followed a symposium under his leadership with, as members of the panel, Dr. Victor Froelicher of Geigy Co. Inc., Dr. H. C. Browning, McGill University (Montreal), Dr. C. R. Twinn, W. A. Ross, Dr. H. L. Sweetman. At the short session held in the evening there was discussed a program of cooperative research on DDT between the Canadian Dept. of Agriculture, Division of Entomology and the Canadian PCO Association. H. G. Crawford, Dominion Entomologist, W. O. Buettner and E. R. Bellemare were the main contributors at this session. It was decided that the Canadian program would be worked along the same lines as that now in operation in the United States.

The third day of the annual meeting was spent at the Windsor Hotel where the annual business session of the Canadian Pest Control Operators Association took place. Following the various reports of the officers and committees, the new officers were elected for the current year as follows:

President—C. E. Ryder, Pest Control Clinic, 149 North, James St., Hamilton, Ont.

Vice-President, Western Territory—Charles Riess, Charles Riess & Co., 372 Colony St., Winnipeg, Man.

Vice-President, Central Territory—E. F. Abell, Waverly Pest Control Co., 93 Ellsworth Ave., Toronto, Ont.

Vice-President, Eastern Territory—Jack Rudick, Western Exterminating Co., 2449 West, Notre-Dame St., Montreal, Que.

Secretary—E. R. Bellemare, Mysto Inc., 3128 Masson St., Montreal, Que., and Inst. of Biology, University of Montreal, 2900 Mount Royal Blvd.

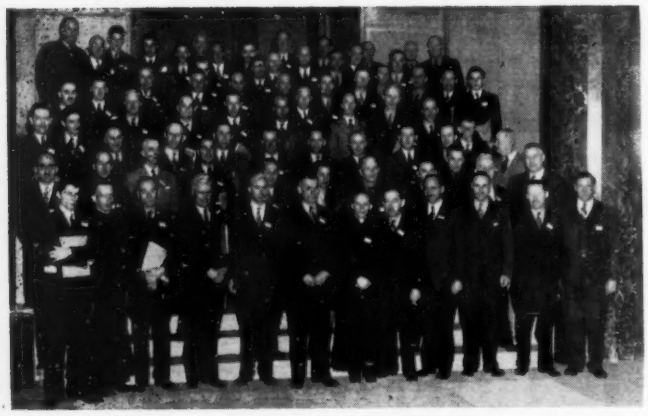
Treasurer—R. W. Menzie, Derpo Products, 5 Orpen Ave., Toronto 4, Ont.

Directors—J. J. Carr, Empire Fumigating Co. Ltd., Foot of Nanaimo St., Vancouver, B. C.; R. F. Hamlin, Fairview Chemical Co., 360 Dufferin St., Toronto 3, Ont.; S. Emanuel, Pestroy Company Ltd., 6659 Park Ave., Montreal, Que.

Special Liaison Representative Maritime Provinces—F. H. Moseley, Scotia Pest Control Service, Post Office, Box 537, Dartmouth, N. S.

Past-Presidents—W. S. Bomby, Ocean Chemicals Ltd., Rear 259-275 Danforth Ave., Toronto, Ont.; P. W. McLeod, Service Fumigating & Pest Control Co., 844 Kingsway, Vancouver, B. C.

An important topic of discussion for the future of the Canadian Pest Control Industry was presented by A. M. W. Carter who discussed the possible effects of the Canadian "Pest Control Products Act" on the operators. In keeping with the courteous and understanding spirit which has prevailed in the various Divisions of the Canadian Department of Agriculture, Mr. Carter invited the criticism and suggestions of the operators on the Act which, although it has been applicable for some time already has not been put into effect due to lack of time during this war emergency. The purpose of the Pest Control Products Act was primarily to



Group in attendance at the 3rd Annual Canadian PCO Conference.

protect the Canadian Public against dubious practices. The same Act might well be adapted to also protect the bona fide operators.

Social entertainment was provided, first when 45 members and guests sat together at the "Priming Dinner" on Sunday. Then there was the annual reception on Tuesday evening when over 150 members and guests enjoyed themselves in the finest of spirits. There were singing, music, dancing and . . . boat races. The presence of several ladies enhanced the social tone of the evening which provided like an oasis of relaxation after two days of hard work.

The annual dinner came as the crowning event with W. S. (Bill) Bomby, master of ceremonies par excellence, who kept everybody in the best of moods. The serious note came from Charles Pomerantz (Bell Exterminating Co., New York), the guest speaker of the evening, whose address "Why a PCO Conference" proved to be a real piece de resistance. Charles, in his quiet, sincere and dignified manner, related the story of his own life before and after entering the field of pest control; his hesitancies, his doubts, his disgust; then, after his first PCO Conference, his determination, his enthusiasm, his contentment. The ideas developed were those which are likely (1) to create in the PCO's a strong desire never to miss a Conference and (2) to stimulate in the Conference sponsors that sense of responsibility which presides over the preparation of more worthwhile program.

Other speakers at the dinner included NPCA President Theodore Oser and Secretary William O. Buettner; Dean Arthur Leveille; CPCOA retiring President P. W. McLeod, President-elect C. E. Ryder and Secretary E. R. Bellemare.

Father O. Fournier, University of Montreal, was presented with a certificate of Honorary Membership in the NPCA by President Theodore Oser. CPCOA President C. E. Ryder also delivered Honorary Membership certificates confirming last year's nominations to W. O. Buettner, Dr. C. R. Twinn, W. N. Keenan, A. M. W. Carter, Father O. Fournier and P. H. Maheu.

And so ended the Third Canadian PCO Conference, the success of which has surpassed all expectations. The causes of this success, if analyzed, may well be attributed first to the interest displayed by each individual member in attendance. The papers, it is true, had an exceptional value and the Conference personnel included top rate men in every line but one must admit that these factors alone would have made for just a good or maybe a very good Conference. What really made it outstanding was the personal contributions of each man on the floor during "questions and answers" periods. The lecturer may have all the theories, he may know of all the factors involved in a biological process, but the facts and experience come from the floor!

PEST CONTROL SAID NECESSARY

The control of pests in domestic, commercial and industrial life is a rapidly growing science and those engaged in this work are gaining "increased respect and public confidence," Charles Pomerantz, of New York, a commercial control operator, told delegates to the third annual Pest Control Operators' Conference at the closing dinner in the Windsor Hotel last night.

The chairman of the meeting was C. E. Ryder, of Hamilton, Ont., who was elected to the presidency of the Canadian Pest Control Operators Association, replacing P. W. McLeod, of Vancouver, at the annual business session of the organization yesterday afternoon. Jack Rudick, of Montreal and F. Abell, of Toronto, were elected vice-presidents, and Charles Riess, of Winnipeg, was re-elected to the post of vice-president.

E. R. Bellemare, of Montreal, was re-elected secretary, while R. W. Menzie, of Toronto, was re-elected treasurer. The new board of directors includes A. Moseley, Halifax; S. Emanuel, Montreal; E. Hamlin, Toronto; and J. J. Carr, Vancouver.

In his address last night, Mr. Pomerantz said pest control men were engaged "in a calling which makes men's lives cleaner and happier in general" and added that, "you have a real standing in the community and are performing an invaluable service to your fellow men."

Mr. Pomerantz recalled that pest control as a profession was often ridiculed in past years, but that now the trade was becoming recognized as an important part of everyday life.

During the evening Rev. Ovila Fournier, of the department of entomology of the University of Montreal, was presented with a certificate of honorary membership in the association in recognition of work accomplished in pest control. The presentation was made by Theodore Oser, of Atlanta, Ga., president of the National Pest Control Association.

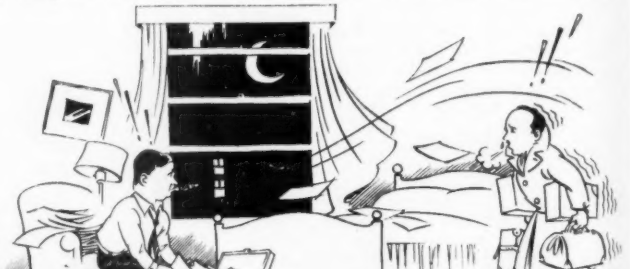
Msgr. Olivier Maurault, rector of the University of Montreal, and A. Leveille, dean of the faculty of science at the university, also spoke.

During an afternoon meeting in the Windsor Hotel yesterday, the 137 delegates attending the conference discussed current problems in professional extermination reviewing a number of problems affecting the trade both in the United States and Canada. The Canadian Association, in co-operation with the entomology division of the Federal Department of Agriculture, shortly will launch a research project here to determine the effectiveness in household pest control of DDT, a powerful white crystalline powder now being used extensively in the United States armed forces for insect control.

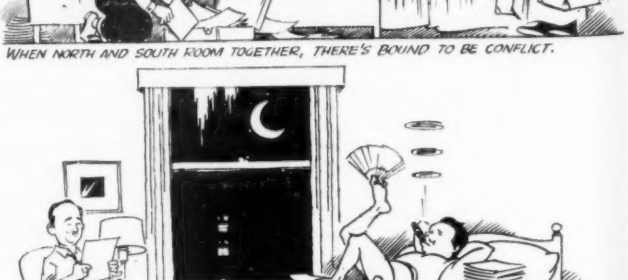
The Montreal Daily Star.

Cold Weather Versus Hot Weather

Those attending the pest control operators' conferences and other meetings know about the daily discussions between President Ted Oser and Secretary Bill Buettner of the NPCA on the relative merits of PLENTY fresh air. A heat wave to hatless "Bill" could mean 10° below zero. There being no air conditioning at Montreal, prompted the boys supplying Bill with a fan but notwith-

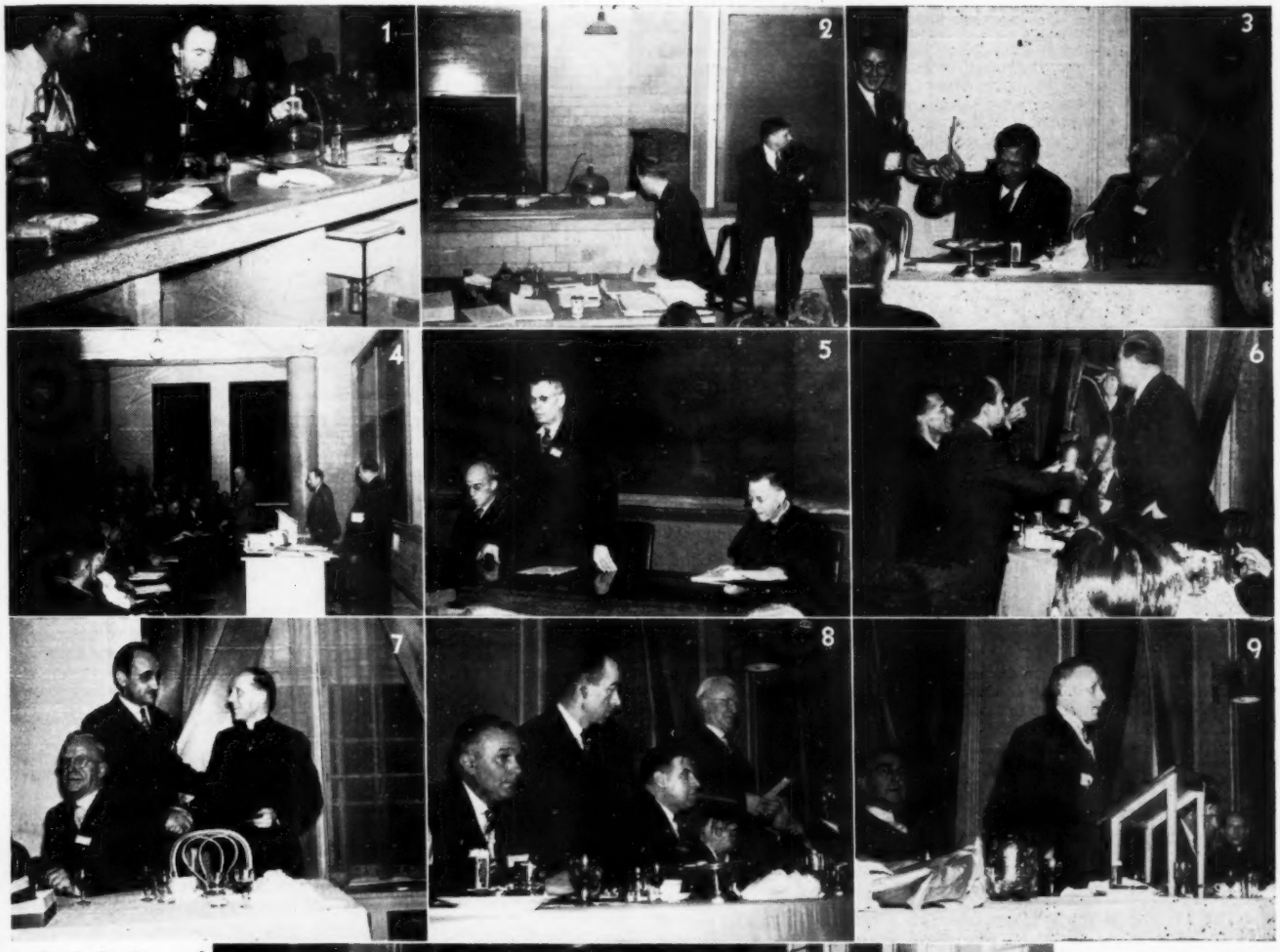


WHEN NORTH AND SOUTH ROOM TOGETHER, THERE'S BOUND TO BE CONFLICT.



A LITTLE BRAIN WORK ON TED'S PART ... AND EVERYBODY IS HAPPY!

At the Third Canadian PCO Conference, University of Montreal, February 19-21, 1945.



1—Paul Cartier and Eddy Bellemare rescuing the rats which collapsed in an atmosphere of HCN.

2—HCN is diffusing under the bell jars. The tubing connected to the jars is for removing the fumigant after the experiment.

3—Bill Bomby, on Ted Oser's behalf, presents Bill Buettner with a jar which will help him fight the high temperature of hotel rooms.

4 — Fumigation session in full swing, with Doc Chapman, Bert Eldredge and Bill Buettner at bat.

5 — Opening session, left to right, Dean Arthur Leveille, Cl. COA President P. W. McLeod, Msgr. Olivier Maurault, rector of University of Montreal.

6—Demonstration: How to light a yard-long cigar.

7—Pres. Theodore Oser (NPCA) handing Father O. Fournier, University of Montreal, his Honorary Membership Certificate.

8—Scene at Annual Dinner, left to right, Charles Pomerantz, Eddy Bellemare, Bill Buettner, C. E. Lyder, Father Fournier and Bert Eldredge.

9—Charles Pomerantz, guest speaker at Annual Dinner.

10—At Annual Dinner Head Table.

11—Group in attendance at one of the Tuesday sessions.

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standing, the perspiration rolled profusely. Secretary E. R. Bellemore has forwarded copy of letter written by retiring president P. W. McLeod, which is worth while publishing.

February 27, 1945.

Mr. W. O. Buettner, Sec.,
National Pest Control Association, Inc.,
3019 Fort Hamilton Parkway,
Brooklyn 18, New York, U. S. A.

Dear Mr. Secretary:

I am pleased to report that my last and final official act as the President of the C.P.C.O.A. was to deposit in the University of Montreal vaults the silky, breezy, cooling, refreshing and radiated piece of apparatus* intended to make your stay in the Montreal hotels more enjoyable during our Eastern Canada five below zero heat waves.

In accordance with the wish expressed by your valet, Teddisco Osero, said apparatus will be kept securely till your return to

Montreal when it will be placed at your disposal for neutralizing the heat emanating from your **Corpore materiale** under the intense activity of your intellect, and for likewise dehydrating your brow, without the need of converting a perfectly comfortable hotel room into an igloo.

In order to conserve said piece of apparatus, adequate moth-proofing, rat-proofing, mouse-proofing, carpet beetle-proofing, powder-post beetle-proofing, fungus-proofing, termite-proofing and fool-proofing treatments have been applied by experts who have operated at ocean-deep cut prices, with an illimited guarantee to the effect that the apparatus here-above mentioned will stand even the Vancouver, B. C., climate and pest infestations conditions.

Your humble servant,
P. W. McLEOD,
Retiring President,
Canadian Pest Control Operators Association

*The apparatus referred to above may be described as a fan which may be operated either by hands or feet without the use of any alien source of power. This last specification, as a special wartime measure.

Second Annual Series Of Pest Control Short Courses

RUTGERS, 1945

THE NEW JERSEY Pest Control Association in cooperation with Rutgers University presented a short course in insect identification on March 5, 6, 7, and 8, 1945 at the University, in New Brunswick, New Jersey.

Because laboratory facilities were available for only thirty, no more than that number could be accepted for enrollment. The registrants came from New Jersey, New York, and Pennsylvania. Dr. John B. Schmitt who prepared the outlines and keys for the course, suited the program admirably to the needs of the pest control operators. His lectures combined demonstrations, slide collections with some beautiful Kodachromes of insects, museum material, microscopic technique and movies.

The first morning was devoted to a review of insect structure with special emphasis on leg structure and mouth parts. The mouth parts were unusually illustrated by the feeding of bread crumbs by the students to American roaches which were pinned on their backs. The chewing action was observed under microscopes.

The afternoon session consisted of a review as to the use of keys in identifying insects. The keys were conveniently divided into the following classes:

1. Arthropods attacking man or transmitting disease
2. Nuisance pests and occasional invaders
3. Wood destroying insects
4. Food destroying insects
5. Fabric destroying insects

The morning and afternoon sessions began with a lecture illustrated with slides or movies. To learn proficiency in the use of keys the class participated in keying out insects portrayed on slides. After the lecture each student, armed with an outline, microscope, and specimens practiced his own tracing of the keys.

New Jersey Pest Control Association Meeting

The Arthropods attacking man which received most attention were the ticks, mites, fleas, bedbugs, mosquitoes and flies. The more important nuisance pests and occasional invaders keyed out were the flies, numerous beetles and crickets. The wood destroying insects included the large carpenter bee, ants, termites and various beetles. Classification of fabric and food destroying insects highlighted weevils, beetles, moths and their larvae.

Part three of the course, which was devoted to collection, preservation, and care of insects, provided a red letter day for the PCO's. They came away bearing gifts; a set-up for starting their own collection complete with aspirators with which to collect small insects, bottles, brushes, boxes, pins, pipettes, and labels. The PCO's bent glass tubing and assembled their aspirators in a gala laboratory session.

In recognition of the importance of the mosquito today in our problem of home-coming malarial soldiery, part four of the course was applied to principles and practice of mosquito control both of larvae and adult, and recognition of sixteen common species found in New Jersey. Special attention was given to the Anopheles Quadrimaculatus and Culex Pipiens.

The PCO's worked in real class-rooms from 9:30 to 12:30, lunched in a group at a local hotel, and returned at 2:00 to pursue their studies until 5:00. This procedure encouraged a comraderie which they can all long remember with good will.

Late in the afternoon of the fourth day each student was given a certificate by Rutgers University, College of Agriculture of New Brunswick, of New Jersey reading, "This will certify that ..... has faithfully attended the exercises of the short course in insect identification—advance course given at New Brunswick, New Jersey, March 5-8, 1945."

During February and March 1944, two three-day courses in insect identification were given by Rutgers. These sessions had been over-subscribed and to accommodate some of these who could not attend last year, a similar three-day primary course was given February 19, 20, and 21, 1945.

The exercises were concluded by a vote of thanks to Dr. Schmitt, who conducted the course, Prof. Fillmer, who assisted him and Dr. Pepper, the acting head of the Department of Entomology.

Sincere appreciation was also expressed to the Education Committee of the New Jersey Pest Control Association for its endeavors in making this much needed and much longed for course a reality. The Education Committee, headed by J. Edwin Sameth, was congratulated for its splendid accomplishments.

Florida PCOs' Meeting

THE DEPT. OF ENTOMOLOGY, College of Agriculture, University of Florida, Gainesville, Florida, in cooperation with the National PCO Association sponsored the meeting that took place at the University April 21-28, 1945. Prof. John T. Creighton presided as Chairman.

Meetings of this nature are always highly beneficial and important, considering the value and vital information PCO's obtain from the results of these meetings.

The following program clearly shows the advantage of attending such meetings:

FRIDAY, APRIL 27, 1945

9:00 A.M.—Registration—Room 306 Agricultural Building.

MORNING SESSION

Room 308—Agricultural Building
John T. Creighton, Presiding.

9:30 A.M.—The Objectives of The Florida Pest Control Operators' Meeting. F. deL. Clements, Fort Lauderdale, Florida.

9:45 A.M.—The Pest Control Industry at The Crossroads. Theodore Oser, President, National Pest Control Association, Atlanta, Georgia.

10:15 A.M.—Relationship Between South-Eastern Pest Control Operators and The National Pest Control Association. William O. Buettner, Secretary, National Pest Control Association, Brooklyn, New York.

10:45 A.M.—Insect Structure and Insect Control. John T. Creighton, University of Florida, Gainesville, Florida.

11:15 A.M.—Laboratory Demonstration—Insect Structure.

12:00 Noon—Lunch—University Cafeteria.

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AFTERNOON SESSION

1:30 P.M.—Insect Identification. A. N. Tissot, Associate Entomologist, Florida Experiment Station, Gainesville, Florida.
2:00 P.M.—Laboratory Demonstration—Insect Identification.
2:30 P.M.—The Relationship Between The State Board of Health Entomologist and Florida Pest Control Operators. John A. Mulrennan, Entomologist, Florida State Board of Health, Jacksonville, Florida.
3:00 P.M.—The Principles of Fumigation. Roy T. Wilmot, Fumigation Specialist, Florida Experiment Station, Gainesville, Florida.
3:30 P.M.—Laboratory Demonstration. Fumigation Laboratory.
4:00 P.M.—The Control of Rats. H. J. Spencer, U. S. Fish & Wildlife Service, Gainesville, Florida.
5:00 P.M.—Adjournment.
7:00 P.M.—Dinner for Pest Control Operators and Friends.

SATURDAY, APRIL 28, 1945

9:00 A.M.—The Control of Houseflies, Roaches, and Bedbugs, including a discussion of the uses of DDT by Pest Control Operators. John T. Creighton, University of Florida, Gainesville, Florida.
9:30 A.M.—Demonstration—Control of Houseflies, Roaches and Bedbugs.
10:00 A.M.—Florida Insecticide Laws. J. J. Taylor, State Chemist, Tallahassee, Florida.
10:30 A.M.—Termites and Their Control. J. R. Watson, Florida Experiment Station, Gainesville, Florida.
11:00 A.M.—Organization and Business Meeting.
12:00 Non—Adjournment.

Michigan PCO's Meet At Michigan State College

MICHIGAN STATE COLLEGE at East Lansing, Michigan, provided a very successful Insect Identification Course for the benefit of Pest Control Operators, April 11th and 12th. Over fifty were in attendance.

Important phases of entomological demonstrations and study were given by Professors Ray Hutson and E. I. McDaniel. Others who participated were J. Carl Dawson, Ben Culver, Theodore Oser, and William O. Buettner.

The Pest Control Operators of Michigan unanimously decided to form a Michigan State Pest Control Operators' Association. The banquet that culminated the two days' session allowed for enthusiastic remarks to be made about the value of the course and wishes for an annual meeting of similar nature. William Bomby of Toronto, Canada was Toastmaster and called upon several to speak.

PCO INSECT IDENTIFICATION CONFERENCE
April 11, 12, 1945
MICHIGAN STATE COLLEGE

Wednesday, April 11—Forenoon Session—E. J. Van Core, Chairman.
Welcome by President of Michigan State College, J. A. Hannah, and Karl McDonel, Secretary of Michigan State College.
Why We Are Here—W. O. Buettner, Secretary, National Pest Control Association.
The Principles of Insect Identification—Ray Hutson, Entomology Department, Michigan State College.

Afternoon Session—George Hammert, Detroit, Chairman.
Why a Pest Control Operators' Conference—Theodore Oser, President, National Pest Control Association.
Beetles with Special Attention, Carpet Beetle Larvae—E. I. McDaniel, Entomology Department, Michigan State College.
Cereal Insects in Homes—Ray Hutson.

Thursday, April 12—Forenoon Session—E. A. Christiansen, Kalamazoo, Chairman.
Clothes Moths, Carpet Beetles and Silverfish—E. I. McDaniel.
Methyl Bromide Fumigation—J. Carl Dawson, Dow Chemical Co., Midland, Michigan.
Roaches, Bedbugs, and Flatbugs—Ray Hutson.

Afternoon Session—Albert R. White, Hazel Park, Chairman.
Fleas and Flies—E. I. McDaniel.
Hydrocyanic Acid Fumigation—B. C. Culver, American Cyanamid & Chemical Corporation, Oak Park, Illinois. (There was also given a demonstration of sublethal dosages of Calcium Cyanide for rats.)
General Discussion on Miscellaneous Pests in which the panel was Buettner, Dawson, Culver, Lynch, Mann, McDaniel, Hutson.

Evening Session
Banquet—Hotel Olds—William Bomby, Toronto, Canada, Toastmaster. Speakers—Theodore Oser, Alfred Goulet, Harold Smitter, Ray Hutson, E. I. McDaniel, and William O. Buettner.

Pest Control Operators of Michigan Meet at Michigan State College, East Lansing, Michigan, April 11-12, 1945.

North Central States Entomologists Meet

THE North Central States Entomologists Conference came to an end with its 24th session held at Purdue University, March 29 and 30. Since 1921 entomologists of the north central states have met to discuss informally their problems, results of research, and plans for the coming year. From a group of seven that met at Lafayette, Indiana, in 1921, it has extended its scope and attendance to some 12 or 13 states and 200 attending. Because of O.D.T. regulations it was necessary to limit attendance to 50. As a result, the actual attendance was 61, 46 of whom were from outside Lafayette, the local entomologists not being included in the limited attendance.

Although those attending the conference were unanimous in maintaining an informal conference, prepared papers for reading being prohibited, it was felt it would be desirable, for various reasons, to organize as an association with elected officers. As a result, the group organized as the North Central States Entomologists Association and the first officers were named. J. J. Davis of Purdue University was elected president, and M. D. Farrar of the Illinois Natural History Survey was elected secretary. Whether or not the newly organized association will seek admission as a branch of the American Association of Economic Entomologists will depend upon a mail ballot to be made. The 1946 meeting will be held at the University of Illinois, Urbana, Illinois.

Because of the restricted attendance, the program was limited to the major insect problems of the Mid-West. Five sessions were held with the major problems discussed and chairmen of the sessions as follows:

Chinch Bug—George C. Decker.
European Corn Borer—W. G. Bradley.
Vegetable Garden Insects—Ray Hutson.
Codling Moth—L. F. Steiner.
Insecticides and Appliances—Harold Waters.

Two Sailors Repel Attack on Constitution

Washington, March 6 (UP).—The United States Constitution, bulwark of the nation's liberties, has just passed through one of its greatest perils, it can be revealed today.

The crisis involved an attack by what government entomologists described as a hungry Attagenus piceus dermestidae, or a black carpet beetle. The bug, described as an "impoverished specimen" that had been living under "starvation conditions," was found crawling on the original of the Constitution in the Library of Congress.

Two sailors—Gunner's Mates Frank Small, of Salem, Mass., and C. Zwaska, of Chicago—spotted the intruder on Saturday. No harm was done, but dichloride crystals were put into the Constitution's case as well as that of the Declaration of Independence to prevent any further invasions. As for Piceus, he passed away of his own accord in the library during the day.

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KEEPING UP WITH RESEARCH

By **J. J. DAVIS,** ***Purdue University***

(Editor's Note: It is our plan to provide from time to time, brief abstracts of published papers which may be of interest to the pest control operators.)

BRENN, J. L. Controlling confectionary plant insects. Mfg. Confectioner, vol. 24, No. 8, pp. 15, 27. August 1944. "The problem of insect control is not only one of the most serious confronting any processor of foods but it is also in many cases the least understood of all the problems the confectioner encounters." Losses run into the millions annually and "perhaps the annual bill for unscientific insect control almost equals it, and yet in too many cases the money is wasted." Emphasizes importance of recognizing kinds of insects, their life history and breeding habits, and type of insecticides. Emphasizes value of fumigation and follow up practices to maintain continuous control.

Campbell, F. L. Roach Control. Sci. Monthly. vol. 58, No. 5, pp. 395-396, 1944, Methods against roaches include water containing boric acid, sodium fluoride in various forms, DDT, and baits containing white phosphorus.

Carter, R. H. and E. L. Gooden. Flourine insecticides: A study of chemical and physical properties of commercial sodium fluoride and sodium flosilcate in relation of their insecticidal use. Soap and Sanitary Chemicals. vol. 19, No. 3, pp. 99, Ill. 117, 1943. Most of the sodium fluoride and sodium fluosilicate available commercially is of satisfactory purity. For dusting the fluosilicates are physically inferior because of relation coarseness, but manufacturers should be able to correct this fault.

Cox, A. J. Insecticides testing. Soap and Sanitary Chemicals. vol. 20, No. 7, pp. 123-25, 129, 1944. Bioassay methods of testing insecticides and raticides are described in detail. Advice for applying uniform amounts of insecticides powers is described. Tests with red squill against rats are described in detail. A red squill that is not lethal to 50 per cent of the test animals when fed at the rate of 7 grains per pound of body weight of male albino rats is generally considered too weak to be used as an effective raticide.

English, L. L. A slide rule for estimating schedules for fumigating with methyl bromide. Jour. Econ. Ent., vol. 37, pp. 114-115, 1944. The construction of a slide rule for use in fumigating plants with methyl bromide is described. The rule provides for the estimation of schedules covering a dosage range of 0.5 to 4 pounds of methyl bromide per 1000 cubic feet, an exposure range of 1 to 10 hours, and a temperature range of 60 to 1000 F. A scale of load-factors permits a wide selection of fumigation schedules. The use and adaptation of the slide rule are discussed.

Fitzgerald, J. S. The effectiveness of various mineral dusts for the control of grain pests. Bul. 182, Council for Scientific and Industrial Research, Commonwealth of Australia 1944. This bulletin embodies the results of a laboratory study of an aspect of control that has hitherto received little attention, viz. control by the use of insect mineral dusts. These are dusts that are not toxic in the ordinary chemical sense yet kill insects, apparently by desication. The most effective particle size are those with diameters of less than 10 microns or those passing a 200 mesh. The dosage required to protect wheat differs according to the dust and the humidity, but for effective dusts 0.25 per cent to 0.5 per cent of the weight of the grain appears sufficient to retard weevil development.

Ginsburg, Joseph M. Aerosol sprays for killing and repelling mosquitoes. Proc. New Jersey Mosquito Extermin. Assn. vol. 30, pp. 211-217, 1943. A review of the literature indicating the various methods and apparatus for producing and applying aerosols is given and the chemical and physical properties of aerosols are discussed.

Ginsburg, J. M. Mosquito oils, larvicides, repellents, outdoor sprays and their application. Bul. 711. W. J. Agric. Exp. Sta. Apr. 1944. 12 pp. This bulletin contains essentially the same information as in the preceding citation and may be obtained by addressing the New Jersey Agricultural Experiment Station, New Brunswick, New Jersey.

*Contribution No. 2342, Division of Entomology, Science Service, Department of Agriculture, Ottawa, Canada.

Ginsburg, J. M. Outdoor protection from mosquitoes. Jour. N. Y. Ent. Soc. Sept. 1944. pp. 247-254. Of the many mosquito repellents, three, namely, diamethyl phthalate, Indalone, and Rutgers 612 are rather widely used. Gives disadvantages of frequent use of the repellents. Discusses development of the New Jersey Pyrethrum Mosquito Larvicide for use in breeding places in place of oil. The larvicide consists of 66 per cent kerosene, 0.5 per cent of sodium lauryl sulphate as emulsifier, 0.07 per cent pyrethrins and 34 per cent water. This concentrated emulsions is diluted with 10 parts of water just before using. More recent tests have shown that this same emulsion, but diluted with 12 parts of water can be used effectively for freeing areas of mosquitoes for a period of hours. Full directions are given in the article. Pest control operators may find a field for mosquito control service in some areas.

Glass, E. H. Value and use of volatile nitriles for household fumigation. Jour. Econ. Ent., vol. 37, Feb. 1944, pp. 74-78. Research of recent years has brought forth several new fumigants and has shown that several groups of compounds possess promising insecticidal characteristics. Among these is a group with the general formula RCN, known as the nitriles. Among those that have been considered as fumigants are monochloroacetonitrile Cl CH_2 CN), trichloroacetonitrile (Cl$_3$ CCN), and acrylonitrile (CH_2 CH CN). The chloroacetonitriles are lacrymators. Trichloroacetonitrile and a 50-50 mixture of trichloroacetonitrile and acrylonitrile were tested for use in household fumigation. Both are highly toxic to insects but not highly dangerous to warm-blooded animals. The results of several house fumigations indicate that trichloroacetonitrile is peculiarly useful for this purpose. According to the author, "because it is very toxic to insects, penetrates well, and airs out rapidly, it is possible to fumigate a house during the day, ventilate for a few hours and admit the occupants the same night." In our opinion, much more study is necessary before these materials are to be recommended.

Goodhue, L. D. The use of Freon in insecticides. Refrig. Engineering, vol. 47, pp. 26-27, 1944. The use of Freon as a solvent and propellant in a new method of applying insecticides is described. The huge wartime use of a leading refrigerant is said to have been of great aid to our armed forces overseas, bomb containers of insecticidal aerosol having proved effective against the malarial mosquito in tropical countries. The method also gives improved results over those obtained with the oil-base insect spray commonly used to combat household insects, since it eliminates the oil and produces a floating fog that spreads to all parts of an enclosure and reaches every insect. A satisfactory aerosol is produced from a solution of pyrethrum extract and sesame oil in liquid dichlorodifluoromethane (Freon 12); it is noninflammable and toxic to flies, ants, wasps, and roaches, as well as to mosquitoes and many other insects, but is innocuous to man and animals. The aerosol is especially well adapted to airplane fumigation. Exp. Sta. Rec.

Griswold, Grace H. Studies on the biology of the webbing clothes moth (**Tineola bisselliella Hum.**). Memoir 262, Cornell Agr. Exp. Sta., June 1944. An excellent report of an exhaustive study of the biology of the common clothes moth. No discussion of controls. A very good bibliography of the more important published papers.

Hamburger, W. J., and K. R. Fox. New method for quantitative determination of moth damage to textile fibers. Amer. Dyestuff Reporter, vol. 32, pp. 357-360, 373-374, 1943. Describes method developed to determine moth and carpet beetle damage. The reduction in mean staple length due to carpet beetle damage was found to correlate well with chemical determinations of the fluorine content of fiber samples treated with silicofluoride types of moth-proofing compounds and is considered, therefore, to be sufficiently sensitive and accurate criterion for use in control work in commercial practice.

Howe, R. W. An investigation of the changes in a bin of stored wheat infested by insects. Bull. Ent. Research, vol. 34, No. 2, pp. 145-158, 1943. A bin containing 1½ tons of wheat was slightly infested in May, **Calandra oryzae** being the predominent species. By November the insect infestation was heavy and the grain was found to have heated to 33° C. at 25 cm. depth, although at the bottom it was less than 15° C. In December the temperature reached 37° C. at 10 cm. depth and receded again within 2 weeks to air temperature below 5° C. The high concentration

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of CO_2 produced by the insects made conditions at the bottom of the bin unsuitable for them. The temperature became too high in the upper part of the bin for **C. oryzae** and with the consequent reduction in numbers and cold weather, the grain cooled. Review by A. J. Basinger in Biol. Abstracts.

Linsley, E. G. Protection of dried packaged foodstuffs from insect damage, Jour. Econ. Ent., vol. 37, pp. 377-379, June 1944. Reports on studies of containers for overseas shipment of dried and dehydrated foodstuffs, to replace metal packages. Conclusions reached are: 1. No commercially available glass- or metal-substitute packages are known to be insect-proof against all pests. 2. The best commercial package thus far tested is a heavy fiber board carton dipped twice in thermoplastic wax. 3. Repellents offer promise of increasing the usefulness of the various wax—and paper-coated packages. Among the more promising materials thus far investigated are the dinitro-cresol compounds. 4. Dehydrated foodstuffs in spite of their low moisture content are subject to insect infestation and damage. They require essentially the same protection from insects that is afforded air- and sun-dried products.

McDonald, J. E. and G. S. Fraps. First Annual Report on the Operation of the Texas Insecticide and Fumicide Law. Texas Agr. Exp. Sta. Cir. 104, 12 pp., 1944.

McGovran, E. R., M. S. Schechter, and J. H. Fales. New insecticide material: Study of the toxicity of alpha, beta debromo-beta-nitroethylbenzene in oil sprays against houseflies. Soap and Sanitary Chemicals, vol. 19, No. 3, pp. 107, 117, 1943. As tested by the turntable method, a spray containing alpha, beta-dibromo-beta-nitroethylbenzene at 20 mg. per ml. in deodorized kerosene caused a higher kill of the housefly than one containing pyrethrum extract at 2 mg. pyrethrins per liter. At 10 mg. per ml. it was ineffective, but when combined with 0.5 mg. of pyrethrins the mixture proved about as effective as 1 mg. of pyrethrin spray.

Reed, W. D. Fumigation of army buildings. Bull. U. S. Army Med. Dept., vol. 77, pp. 77-86, 1944. Fumigations with hydrocyanic acid gas conducted on army posts have been under strict supervision of the post engineer and the post surgeon, and by the use of trained personnel no accidents thus far have been reported.

Reed, W. D. Insect and rodent control in the Corps of Engineers. Jour. Econ. Ent., vol. 37, pp. 333-335, June 1944. Discusses the responsibilities and organization of the Medical Corps and the Corps of Engineers in the control of insect and rodent pests in army camps and other military installations; also cooperation with other interested agencies.

Riggs, L. K. Controlling insects a problem in the dairy industry. Milk Dealer, vol. 33, pp. 58, 60. August 1944. Discusses importance of the insect problem in the dairy plant. Emphasizes that plant managers "must have some practical working knowledge of basic entomology." Proper engineering and architectural corrections of buildings and proper construction of future food plants, to eliminate breeding places, provide means of checking insipid outbreaks, etc. are "musts". Where construction does not provide conditions of satisfactory control, high potency sprays and dusts help, but when sprays, reconstruction and mechanical denies fail, fumigation becomes necessary, even though the plant must be shut down.

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Wilford, B. H. Chemical impregnation of trees and poles for wood preservation Cir. 717, U. S. Dept. Agr., December 1944. Chemical impregnations of trees and poles by sap-stream methods have been tried out in one form or another for centuries. Strictly for wood preservation, however, the methods had been frowned upon because they were commercially inadequate. Investigations from 1930 to 1940 in North Carolina and South Carolina with a number of methods, 58 chemicals and chemical combinations, and 1,639 trees and 188 poles, and at different seasons of the year, have shown that farmers and other users of wood—lot trees can increase durability of fence posts, utility poles, and materials for rustic construction with little added expense and labor. For such uses some of the methods proved practical and a few of the chemicals proved effective, but unfortunately none of the methods or chemicals appear faultless. This circular is intended to furnish the information that will be needed by anyone wishing to improve by these methods the durability of wood that is to be used in contact with the ground.

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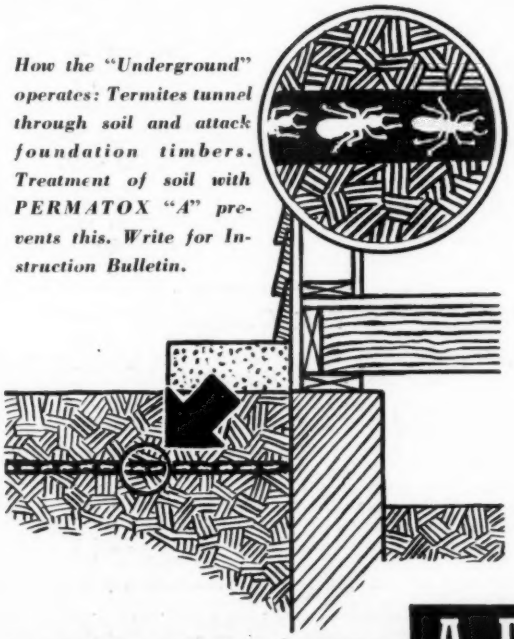

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DDT and The Pest Control Operator

By C. R. TWINN, *Ottawa, Ont.**

Note: The following paper was read at the Third Annual Canadian Pest Control Operators' Conference, University of Montreal, Montreal, Canada, on February 20, 1945. Dr. Twinn is Associate Entomologist, Canadian Department of Agriculture.

THE new insecticide conveniently designated by the abbreviation DDT has become internationally famous in less than two years because of its remarkable properties as an insect killer and the publicity given to it, especially in the popular press. Two years (since it was introduced to North America) is a very short period in which to test the qualities of a new insecticide and, although progress in this direction has been exceptional, especially in connection with the needs of the armed forces, a great deal more research will have to be done before the potentialities and limitations of the material are fully understood.

Two very useful processed publications dealing with DDT were recently issued by the United States Bureau of Entomology and Plant Quarantine, Washington, D. C. One, by R. C. Roark, dated June, 1944, gives a list of publications on DDT from 1874 (when the compound was first discovered) to April 30, 1944; the other, by R. C. Roark and N. E. McIndoo, dated December, 1944, presents a digest of this literature. The list of publications includes 174 references, a large number of which are of a popular nature. No doubt many more have appeared since that date. The digest summarizes the information contained in the technical articles and merely lists the non-technical references based on the former. This is an admirable arrangement for saving the time and labour of the investigator. About 25 of the technical references contain information relating to the control of household insects. In addition, there are, of course, many popular articles on the same subject.

Published scientific data on the effect of DDT on insect pests of special interest to the Pest Control Operator are not as complete or as satisfactory as one might be led to believe, and undoubtedly detailed results of much research have not yet been released. However, available knowledge of the properties of DDT was sufficiently encouraging for the American Association of Economic Entomologists at its annual meeting held in New York City, December 13-15, 1944, to issue a qualified statement summarizing the attitude of entomologists, which reads in part, as follows: "We feel that never in the history of entomology has a chemical been discovered that offers such promise to mankind for relief from his insect problems as DDT," including the fields of "public health, household comfort, and agriculture. . . . In the household field its amazing lasting effect promises relief for months from flies, mosquitoes and fleas. In the case of bedbugs, eradication from the American home has become a possibility." What a promising field of profitable public service for the PCO is forecast in those words!

At this point it might be of interest to sum up the qualities which make DDT an outstanding insecticide. It is extremely effective often in minute dosages against a wide range of species of insects. Coupled with this, its main advantage is its prolonged residual effectiveness, extending into weeks or months. Another exceptional quality is its ability to kill insects both by external contact and as a stomach poison. The stability and low volatility of DDT, its solubility in most organic solvents and insolubility in water, and its lack of colour and odour are all useful features in connection with its use in household insect control. Furthermore, it is less poisonous to humans and domestic animals than certain other insecticide materials currently in general use for this purpose, and may be applied with safety in recommended formulations, if suitable precautions based on the findings of the toxicologists are observed.

The PCO has good cause to be interested and enthusiastic about the development of DDT insecticides, as he is in a favoured position with regard to their prompt utilization as soon as supplies are released to meet civilian needs. The reason for this is that more research has been done on the effectiveness, formulation and application of DDT in the control of insects which affect the health and comfort of man such as mosquitoes, house flies, lice, fleas and bedbugs, than on insect pests in other fields. This work is still in progress in various parts of the world and although some of the information obtained has already been published, doubtless much more will be released when it is considered in the public interest to do so.

Another favourable circumstance is that the PCO has not got to wait for the results of long-term research, to determine how DDT insecticides may be satisfactorily fitted into spraying and dusting schedules employed to combat other insect pests and plant diseases, as have fruit-growers and other agriculturists.

Further, in making use of the excellent and unusual qualities of DDT in destroying household pests, the PCO is not restricted by the problem of how to avoid killing parasitic and predacious insects and honeybees and other pollinators, which are so important to agriculture. Moreover, if proper precautions are taken to avoid contamination of foodstuffs, the PCO is not concerned with the question of the possible toxic effect of spray residues which faces the agriculturist when he applies DDT insecticides to fruit and vegetable crops. These are matters which will require a great deal of investigation.

The PCO is naturally primarily interested in knowing what pests he can successfully combat with DDT, what formulae he should use, and how they should be applied. It should be emphasized that the use of DDT is still in the experimental stage. However, it is known to be effective against bedbugs, fleas, lice, flies, mosquitoes and cockroaches, and also to have value against ants, wasps and clothes moths. Doubtless, as investigations proceed, it will be found to control various other species of interest to the PCO, while at the same time its limitations will become better known, for, as published results indicate, it is by no means a cure-all.

Regarding formulae, it is unlikely that DDT will be available to the PCO in its pure state, but will be sold by insecticide manufacturers in various formulations including dusts, solutions, emulsions, aerosols, etc., designed for specific purposes. The matter of correct formulation with compatible materials is an important one and is still the subject of considerable research, as are also methods of application and improved equipment.

The prolonged residual effect of DDT, which ensures that a surface treated with sprays or emulsions containing it will remain toxic for weeks or months to bedbugs, flies, mosquitoes and certain other insects, and the publicity given to this spectacular quality, is bound to create a widespread demand for its application in homes, institutions, theatres, factories, dairies, abattoirs, mills, warehouses, lumber camps, farm buildings and other places where insect pests attack or annoy man, his animals and products. In view of the fact that the general public lacks special knowledge of insects and control materials and procedures, it seems logical to expect that the PCO will be called upon to an increasing extent to undertake this work. This being so he would be well advised to endeavour to keep informed of developments from research on DDT insecticides. The service letters of the Association and publications such as "Pests" should be helpful in this regard. The proposed cooperative research project between the Association and the Division of Entomology and the similar project already in progress in the United States should also be of value in familiarizing PCOs with the application and effectiveness of DDT formulations.

Pest Control

(As viewed by Campus Copy, a publication edited by and for the staffs of Purdue University.)

We have confessed in a previous issue to having a mind that is evilly stimulated by headlines and the names of associations. We recall having read in the Exponent during our first month on the campus a headline: "Dean of Agriculture Attends Egg-laying Contest." We were momentarily startled, for at that time we had come fresh to the teaching profession and knew little about deans. For some years we have seen notices of pest control conferences to be held on the campus. We avoided inquiry on the assumption that they dealt with either pedagogical methods in the classroom or the practice of parliamentary law in faculty meetings.

This year, apparently, our ignorance is so obvious over the campus that J. J. Davis has sent us an account of the Pest Control Operators Conference held from January 15-19, and now we know what it is all about. We take our information from a story written by Davis for PESTS Magazine. (If any reader wants a more complete account, let him look up the periodical that he thinks best fits that title.) . . .

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HOUSEHOLD PESTS

By A. E. MICHELBACHER, *University of California*

Editor's Note: The following paper was presented at the Pacific Coast Pest Control Operators' Conference held in Fresno, California, February, 1945.

MANY INSECTS and related organisms are considered under household pests. The field is so large that no attempt will be made to cover the entire subject. Instead, some of the more important groups will be discussed. The problems involved are many and varied, and much more research is necessary before a satisfactory answer to all of them will be forthcoming. It would be most gratifying if a satisfactory and economical control measure could be listed for each of our household pests. It would be equally satisfying if there were some simple way by which the pests could be identified easily, their biologies and their interrelations with the environment determined. It is a complex field, and it is fortunate for the pest control operator that this is the case, for otherwise the homeowner would be able to take care of his own problems. Satisfactory control is based upon a thorough knowledge of the pests involved, and because of this, trained personnel is needed to carry out the work.

One group of household pests that is very destructive and causes no end of annoyance is clothes moths and carpet beetles. In the warmer areas and in heated buildings in cooler regions, these pests are likely to be very destructive. Because of more favorable climatic conditions, the volume and reservoir of infestations is greatest in warm climates. As a result, clothes moths and carpet beetles are more of a problem in the Los Angeles area than in the region adjacent to the San Francisco Bay.

In the control of these pests a number of factors must be taken into consideration. Satisfactory control involves several to all of the following points:

1. Destruction of natural sources of infestation
2. Sanitation
3. General cleaning and frequent use of the vacuum cleaner
4. Sunning and beating
5. Type of construction
6. Use of grade "AA" fly sprays
7. Mothproofing
8. Cold storage
9. Fumigation

The destruction of natural sources of infestation is of great importance. This is particularly true where these occur in or near homes or other establishments where damage from these fabric pests is a problem. Unless these sources are removed the danger of early reinfestation is likely to occur. Natural breeding places include bird nests, rodent nests and insect nests. The studies of E. G. Linsley of our staff and other investigators have adequately demonstrated the importance of these natural breeding places, and their elimination should be the first step in any control program. Some pest control operators have already recognized this fact and that successful control without the removal of natural sources of infestations is extremely difficult.

Under sanitation might be considered the destruction of accumulations of materials in which clothes moths or carpet beetles breed. Such sources include accumulations of lint, whether they occur in attics, cold air returns to furnaces, cracks in the floor, or other out of the way places. Also, neglected insect collections, untreated skins, and other materials suited for breeding of these pests but having little or no economic value should be eliminated. Infestations of foods by other insects, if not controlled, will in time create conditions favorable for the breeding of clothes moths and carpet beetles. Bedding places for pets, if not kept clean, may become a source of infestation.

Little need be said concerning cleaning, frequent use of the vacuum cleaner, sunning and beating since the value of these practices is so well known. However, the importance of keeping materials clean can not be over-emphasized. Investigators have shown that the development of fabric pests is slow where wool has been deprived of its natural fats. For this reason, goods manufactured from such materials are not an ideal food. If they become soiled, the danger of a serious infestation developing is greatly increased, and because of this, household goods should be kept strictly clean.

It hardly seems necessary to mention the importance of construction since all persons interested in the control of fabric pests know that problems are most easily taken care of where there are tight-fitting hardwood floors, and few other places that might favor the development of infestations. Floors with many cracks, loose-fitting baseboards and other places where lint can collect offer the most serious problems. Tile roofs, or other construction that is favorable to the nesting of birds, rodents or insects add to the problem of control. Where at all possible, cracks in floors and similar places should be filled with a crack filler of one kind or another. If this is not done, there is always the danger of incipient infestations developing in the lint that collects in such cracks. This occurs even in homes where housekeeping is excellent.

The use of grade "AA" fly sprays might well be considered along with moth proofing. Although such sprays do not have any lasting effect, many will kill the insects that are wet by them. To be effective, they must be thoroughly applied, and repeated and liberal applications are necessary. For best results, sprays should be applied under pressure. The pest control operator probably uses such sprays to give immediate relief while he undertakes measures that will result in more permanent control.

The moth proofing problem is one that needs further investigation. There are a number of materials on the market that are very good, while others leave much to be desired. The materials available fall into two general classes. The first includes inorganic compounds while the second group contains more or less complex organic substances. The former includes the inorganic fluorines and the arsenical compounds. Because of the health hazard involved, moth-proofing materials that contain arsenic should not be used. Sodium fluoride should be avoided because of its high soluble fluorine content. A most satisfactory fluorine compound to use is sodium fluosilicate. A saturated solution of this chemical with a suitable wetting agent such as technical sodium lauryl sulfate makes an excellent moth-proofing solution. It is best applied as a spray and where fabrics are thoroughly impregnated with it, they are well protected from clothes moths and carpet beetles. The period over which products are protected depends upon the subsequent treatment they receive. Articles that are washed soon lose their protection, while those that are left undisturbed may be effectively protected for a number of years. The principal disadvantage of this treatment is that it must be applied as a water spray, and that for most satisfactory control, articles must be thoroughly wet with the solution. Because of this, it may often be wise to treat materials at a plant where provision is made for rapid drying. Further, care must be exercised to see that only materials that can stand wetting with water are treated.

Moth proofing materials belonging to the organic group are soluble in highly refined kerosene or other organic solvents. Important among these are the organic fluosilicates, some of which, according to Donohoe (1945) are said to be very effective. Some are rather highly soluble, and because of this, less volume of material need be applied than where the sodium fluosilicate water solution is used. With these materials, the mothproofing value is rapidly lost if the products are dry cleaned. There are a number of other different mothproofing organic compounds on the market, but they should be used with caution since many of them are not very effective, and impart no true mothproofing quality. Further, investigation by Heal (1942) has shown that the resistance of a treated fabric to attack by the larvae of any single species does not insure that it is effectively protected against attack by other species. He concludes that material must resist the attack of at least both the clothes moth and the black carpet beetle larvae before it may be considered satisfactorily protected. Among other interesting papers that deal with moth proofing and testing are those of Back (1931), Musser (1936), Billings (1938), and Fletcher and Kenaga (1942).

DDT has been found to be very effective in killing both clothes moths and carpet beetles. As with most other materials, dry cleaning tends to reduce the period of effectiveness. Just how long it will remain effective when applied to articles that are seldom disturbed is still to be determined. However, it is probably safe to conclude that its lasting properties will not equal that obtained with a sodium fluosilicate water solution. Much is still to be learned concerning DDT. Information as to the best dosage and volume to use under different conditions must still be obtained. Where used in a household on finer furnishing, it probably should be used dissolved in highly refined kerosene, since some of the other solvents now being used are likely to be injurious to highly-

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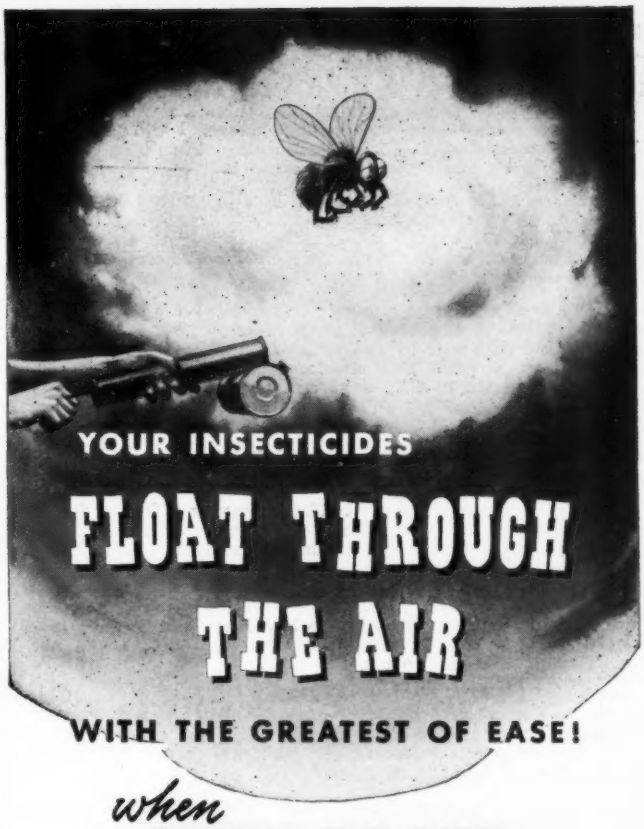

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polished surfaces. Even kerosene, if allowed to drip on such surfaces, might slightly remove the polish. If highly refined kerosene is used, the maximum amount of DDT that can be dissolved in it will be 4 to 5 per cent, but this should certainly be sufficiently high for most uses. In fact, a lower concentration will probably be found suitable for many household purposes. I will not touch on hazards connected with DDT, since this subject has been covered by Professor Essig and Professor Hoskins.

Much interest is currently being shown in the use of aerosol bombs. Although very effective against such insects as flies and mosquitoes, aerosols at the present time appear to show little promise of being of any real value in the control of clothes moths and carpet beetles.

The value of cold storage in protecting fabrics is well known. Damage by fabric pests ceases at temperatures of 50° F. or lower, and although the pests may not be killed, articles can be safely stored for long periods. This means of protecting goods is certainly economical where they have a high value, such as in the case of furs.

If products can be subjected to high temperatures, they can be freed of insect life. Fabric pests are killed if they are actually exposed for several hours to temperatures of 120 to 135° F.

Fumigation is one of the most effective means of killing fabric pests. Naphthalene and paradichlorobenzene are suitable materials to use where small amounts of goods are involved. Where tight fitting boxes or trunks are available, good results can be obtained where these materials are used at the rate of 2 to 4 pounds per 100 cubic feet of chamber space. Colman 1940) subjected the black carpet beetle, **Attagenus piceus** Ol. to low concentrations of paradichlorobenzene vapor for from 5 to 7 weeks and although not lethal, it caused the pest to cease feeding.

Where vaults or chambers are available, a very satisfactory fumigant to use because it offers a minimum amount of hazard is a mixture by volume of three parts of ethylene dichloride and one part of carbon tetrachloride. The minimum dosage to use per 1000 cubic feet of space is 14 pounds.

Hydrocyanic acid gas is widely used to free homes of carpet beetles and clothes moths. This fumigant should only be used by experienced operators, and in talking to this group, I hardly feel that it is necessary for me to enumerate the precautions that should be followed. It is an expensive means of controlling fabric pests, and frequently there has been some complaint concerning its effectiveness. One probable reason for this is that articles are subject to reinfestation as soon as the fumigation is completed. Therefore, if sources of infestation just outside of the structure fumigated are not destroyed, reinfestation is likely to occur in a very short time. It would seem that it should be the responsibility of the pest control operator to see that these sources are removed before the fumigation is done. Further, if there are articles that have been heavily infested, it would appear desirable in some cases, at least, that these be mothproofed. Certainly, auxiliary control measures must be relied upon if most satisfactory results are to be obtained with household fumigation.

In the control of cockroaches there seems to be little new to offer. DDT has been tested rather extensively against two important species and although it shows much promise, additional research is desirable before definite recommendations can be made. This new insecticide appears to be less effective against the German cockroach than the American cockroach. Aerosols to the present time do not appear to have much merit in the control of these pests. Sodium fluoride still appears to be one of the best substances to use, but because of its poisonous nature it must be applied with a great deal of caution. There is a synergistic action when sodium fluoride is used in combination with pyrethrum and a mixture consisting of 25 per cent pyrethrum and 75 per cent sodium fluoride is reported to be the most effective and results in the fastest kill. Sodium fluosilicate, although slower in action than sodium fluoride, is less toxic to humans and eventually results in a satisfactory kill. When used in large amounts these fluorine compounds are likely to cause irritation of the nasal passages. This annoyance can be reduced if a small amount of light oil is incorporated in the dust to facilitate a more rapid settling of the dust. Boric acid is also effective against cockroaches, and since it is less poisonous to humans than sodium fluoride, it can be used in places where the latter would result in too great a hazard.

Most fly sprays having an "AA" rating are effective against cockroaches if the roaches are thoroughly wet with the material. Much of the latest information on the control of these troublesome pests is reported by MacNay (1944).

Bedbugs for a long time have offered a serious control problem. This may now be a thing of the past for investigations to the present indicate that DDT is extremely effective in controlling this pest. Used in light oil it has remained effective for periods ranging into months. Madden et al (1944) recommended that it be used at a concentration of 5 per cent in kerosene, and to insure lasting results, at least 100 milligrams of DDT should be applied per square foot.

Although rather extensive research with DDT in controlling agricultural pests has been conducted by members of our staff, little has been done that involves the control of household pests. The control of flies in dairy barns is probably the nearest approach to this, and in this work a water suspension spray proved very effective. The spray contained the equivalent of one pound of commercial DDT per 100 gallons of water. Work with DDT in kerosene has been undertaken and although probably more effective than a water suspension spray, there is danger of the operator's becoming thoroughly wet with the material, where it is necessary to spray overhead. For this reason it is believed that a water suspension spray offers less hazard where overhead spraying is necessary.

The last group of household insects to be considered are those that infest foods. These insects give rise to many complaints by housewives. If infestations are not taken care of, very large populations may develop which result in the insects migrating to all parts of the house. Usually the destruction or fumigation of the infested product or products will result in the elimination of the problem. Control is usually one that involves cleaning and sanitation. However, some of these pests are rather general feeders and breed in other materials besides foods. Thus some, such as the Indian meal moth, may find bees nests a suitable place in which to breed. If bees in a wall or chimney are killed and not removed, the nests may become infested, and be a source of annoyance. The great increase in the backyard raising of chickens due to the war has undoubtedly resulted in an increase in the number of stored product pests. The none-too-well protected chicken feed can become easily infested, and furnishes a reservoir from which products in the home may become infested.

Most of the insects that infest foods are not likely to injure other articles in the home. There are some few exceptions. One of these, the drugstore beetle, **Stegobium paniceum** Linn., is a very common household pest. It feeds primarily on the coarser cereal products, drugs, spices, herbs, dog food, dried fish, etc., but will attack leather products and thus may become a serious pest of household furnishings. They have also been known to bore into the softer woods, and have been reported as injuring bamboo portions of mah-jongg playing pieces. The cadelle, **Tenebroides mauritanicus** (Linn.), is another stored product pest, that feeds on a wide assortment of foods, and one that might cause damage due to the wood-boring habits of the larvae. This pest, however, probably is never a problem, unless poor sanitary conditions are maintained. In fact, the lack of proper sanitary practices is responsible for many of our most serious insect problems. In conclusion, I would like to state that where a pest control operator is called in and corrects such a situation, he should instruct those concerned on how to avoid a recurrence of the problem.

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Additional Patents Relating to Pest Control

By DR. R. C. ROARK.

2,363,928 (Nov. 28, 1944; appl. Dec. 1, 1941). INSECTICIDE. Seaver A. Ballard, Oakland, and Vernon E. Haury, El Cerrito, Calif. —Shell Development Co., San Francisco, Calif.—An insecticidal composition comprises a carrier and a carboxylic acid ester of an unsaturated alicarbocyclic ketol having the carbonyl group in the yclic ring, said compound being further characterized by having between 10 and 34 carbon atoms.

2,364,075 (Dec. 5, 1944; appl. Oct. 15, 1942). DISINFECTANT COMPOUNDS. Madison Hunt, Claymont, and James E. Kirby, Wilmington, Del., and John F. Lontz, Gadsden, Ala.—E. I. du Pont de Nemours & Co., Wilmington, Del.—A new compound possessing disinfecting properties comprises N,N'-hexamethylene-bis-lauramidine hydrochloride.

2,364,460 (Dec. 5, 1944; appl. Sept. 24, 1940). COATING SYSTEM FOR PROTECTING SURFACES AGAINST MARINE GROWTH. George B. McLean, San Pedro, Calif.—Union Oil Co. of California, Los Angeles, Calif.—A metal article is protected against marine growth by a coating of asphalt and a topcoat of an antifouling paint.

2,365,047 (Dec. 12, 1944; appl. May 29, 1941). PEST CONTROL. Euclid W. Bousquet, Wilmington. and Hubert G. Guy, Newark, Del. —E. I. du Pont de Nemours & Co., Wilmington, Del.—An insect control composition contains as an essential active ingredient a compound selected from the class consisting of phenoxydiphenyl and the mono- and di-halogenated derivatives thereof and a carrier therefor.

2,365,056 (Dec. 12, 1944; appl. Oct. 30, 1943). INSECTICIDAL AND FUNGICIDAL MATERIALS. Gerald H. Coleman and Gerald A. Griess, Midland, Mich.—The Dow Chemical Co., Midland, Mich. —These insecticidal and fungicidal materials contain as active toxic ingredients certain amine salts of dinitrophenols.

2,365,057 (Dec. 12, 1944; appl. Oct. 30, 1943). FUNGICIDAL MATERIALS. Gerald H. Coleman and Gerald A. Griess, Midland, Mich.—The Dow Chemical Co., Midland, Mich.—These fungicidal compositions comprise inert diluents and as active toxic ingredients certain amine salts of halo-phenols.

2,365,245 (Dec. 19, 1944; appl. Sept. 25, 1941). INSECTICIDE. Wesley G. Bruce, Dallas, Tex.—People in the Territory of the United States.—A method of controlling larvae which breed in animal droppings comprises adding to the feed of the animal zinc oxide.

2,365,303 (Dec. 19, 1944; appl. June 3, 1942). GARMENT BAG. Ralph R. Smith, Lakewood, Ohio—National Carbon Co., Inc.

2,365,833 (Dec. 26, 1944; appl. Sept. 5, 1939). PROCESS OF INCORPORATING POLYCHLOROPHENOLS IN FIBERBOARD. Henry L. Morrill, Clayton, and John D. Fleming, St. Louis, Mo.— Monsanto Chemical Co., St. Louis, Mo.—From 1 to 5 percent pentachlorophenol or other polychlorophenol is added to fibers from explosively disintegrated wood.

2,365,979 (Dec. 26, 1944; appl. Oct. 6, 1943). FUMIGANT. William P. ter Horst, Pompton Plains, N. J.—United States Rubber Co., New York, N. Y.—A method of fumigating an enclosed space infested with lower organisms (fungi, bacteria and insects) comprises introducing into said space carbon suboxide.

2,363,852 (Nov. 28, 1944; appl. July 12, 1941). WEATHERPROOF SNAIL BAIT. John G. Beekler, Santa Monica, Calif.—A weatherproof snail bait comprises a body of paraffin wax having incorporated therein approximately 60% by weight of sugar and cereal flour and approximately 2% by weight of finely divided metaldehyde.

Reissue 22,597 (Jan. 30, 1945; original No. 2,362,564, dated Nov. 14, 1944. Appl. for reissue Dec, 9, 1944). PARASITICIDAL PREPARATIONS. Elbert C. Ladd, Passaic, N. J.—United States Rubber Co., New York, N. Y.—A fungicidal composition comprises a carrier and 2,2,4,6,6-pentachloro-4-cyclohexenedione-1,3 as an essential active ingredient.

2,366,203 (Jan. 2, 1945; appl. Oct. 2, 1942). DI-(HALOPHENYL)-DIALKYL ETHERS. John E. Livak, Midland, Mich.— The Dow Chemical Company, Midland, Mich.—These compounds are useful as insecticidal toxicants. An example is alpha,alpha'-di-(2-chloro-phenyl)-di-ethyl ether.

2,366,612 (Jan. 2, 1945; appl. July 28, 1942). IMPREGNATING SOLUTIONS. Bror Olof Hager, Stockholm, Sweden.—Bolidens Gruvaktiebolag, Stockholm, Sweden.—An aqueous solution for impregnating wood or other organic materials contains between 1 and 3 mols of $CuHAsO_4$ and between 2 and 2.6 mols of CrO_3 to every 2 mols of H_3AsO_4.

2,366,667 (Jan. 2, 1945; appl. Dec. 12, 1942). ESTERS OF 2-BUTANE-1,4-DIOL. George F. Deebel, Dayton, Ohio.—Monsanto Chemical Company.—Certain members of the series are useful in the preparation of highly valuable surface active materials such as wetting agents, detergents, emulsifying agents, flotation agents, insecticide spreaders, etc.

2,367,024 (Jan. 9, 1945; appl. July 10, 1942). CLEANING CREOSOTE. Victor F. Hribar, Chicago, Ill.—American Lumber & Treating Co. of Delaware. A method of cleansing creosote which has acquired insoluble forest product impurities in excess of 1.5% of material insoluble in benzol through the treatment of forest products, comprises adding to a quiescent bath of dirty creosote not substantially less than 0.25% and not substantially more than 1% of potassium di-chromate, maintaining the mixture quiescent for an extended period during which matter insoluble in benzol settles to reduce the content thereof in the creosote to less than 1%.

2,367,155 (Jan. 9, 1945; appl. May 23, 1941). INSECTICIDAL COMPOSITION. Friar M. Thompson, Jr., Wilmington, Del.—Hercules Powder Company, Wilmington, Del.—An insecticidal composition comprises an active ingredient selected from a plant body of the group consisting of comminuted derris root, cube root, timbo root, and pyrethrum flowers and a terpene haloacyl ester (e. g. fenchyl chlorcacetate).

2,368,071 (Jan. 23, 1945; appl. Feb. 6, 1942). KETALS OF POLYHYDROXY NITRO COMPOUNDS. Murray Senkus, Terre Haute, Ind.—Commercial Solvents Corporation, Terre Haute, Ind. —The nitro dioxanes are useful as insect repellents. An example is 5-nitro-5-methyl-2-hexyl-2-methyl-1,3-dioxane.

2,368,195 (Jan. 30, 1945; appl. Sept. 15, 1941). INSECTICIDAL COMPOSITIONS. Edgar C. Britton, Gerald H. Coleman, and Wesley D. Schroeder, Midland, Mich.—The Dow Chemical Company, Midland, Mich.—An insecticidal composition comprises a petroleum distillate solution of pyrethrin and N-methyl-N-phenyl-crotonamide.

2,368,357 (Jan. 30, 1945; appl. May 12, 1942). INSECTICIDE. Edward Harvill, Yonkers, N. Y.—Boyce Thompson Institute for Plant Research, Inc., New York, N. Y.—Substituted thiocyamogen succinic acids are insecticides, for example ethyl-alpha-carboethoxy-alpha-(gamma-thiocyano propyl)-beta-methyl succinate.

2,368,368 (Jan. 30, 1945; appl. Feb. 23, 1943. POISON MIXTURE FOR TRAP GUN CARTRIDGES. Ethel P. Mariman, Las Animas, Colo.—The Humane Coyote Getter Inc., Las Animas, Colo. —A poison mixture for use in the loading of cartridges for trap guns of the type that discharges into the mouth of an animal to be killed, comprises a mixture of an alkali cyanide and a mineral oil in such proportions as to form a soft paste.

2,368,581 (Jan. 30, 1945; appl. May 8, 1941). ANIMAL TRAP. Herbert A. Stilson, Chicago, Ill.—Gill Metal Products Corporation, Marengo, Ill.

Roach Repellent Cement

Is the title of an article by Frank O. Hazard, Wilmington College, in April (1945) Soap and Sanitary Chemicals. It is a study undertaken to obtain quantative data on the possible repellency of Hubbellite to cockroaches. Hubbellite, a cubriferous cement developed by Dean S. Hubbell of Mellon Institute of Industrial Research, is an incorporation of finely divided copper powder in magnesium oxychloride cement, unique properties of which have led to its wide use as a floor surfacing.

Summary of Mr. Hazard's findings follow: "Gray-colored Hubbellite shows a marked degree of repellency against the German, American, and Oriental Roaches. Where the Hubbellite half of the test chamber is supplied with food and water, repellency is obtained there even in the absence of food or water, or both on the Portland cement half. Red, brown, and green Hubbellites are equally repellent to German and American Roaches, but less effective against the Oriental species. Hubbellite does not possess properties toxic to the German Roach. These results will be of interest in the consideration of Hubbellite as a flooring, especially for rooms or buildings for food storing, selling and servicing."

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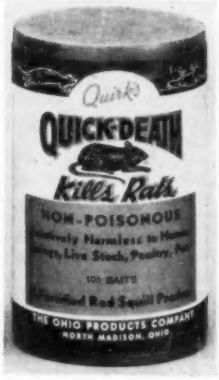

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Minutes of the Meeting of the Alabama Pest Control Operators, Hotel Redmont, Birmingham, Ala., March 10, 1945

The meeting was called to order by Mr. Abe Krawcheck, President, who welcomed the group to Birmingham. In the absence, due to sudden illness, of the President of the National Pest Control Association, Mr. Theodore Oser, who had planned to present a reading of an address entitled "Why a Pest Control Conference," made by Mr. Charles Pomerantz at the Eastern Pest Control Conference, this paper was read by G. H. Burnett.

Dr. George A. Denison, Jefferson County Health Officer, spoke on the Typhus Fever problem confronting the county and of the efforts of his department in controlling it. His attitude toward the Pest Control Operators is most cordial and many very important points were made in his talk.

Mr. Clyde Herring, Sanitary Engineer of Jefferson County, presented a film of the United States Public Health Service, dealing with rats and their control. Some exceptional shots of rat activity and suggested control measures made it a most worth while picture.

Professor J. M. Robinson, head of the Department of Entomology, Auburn Polytechnic Institute, spoke on "Fumigation and Its Hazards." Professor F. E. Guyton, of Auburn, who was scheduled to take this part of the program, sent his regrets; duties as chairman of the Red Cross Drive prevented his attending.

Mr. B. P. Livingston, of the Alabama Department of Agriculture and Industries, spoke on the State Law, and invited suggestions toward improvements or changes desired by the industry. This resulted in a unanimous vote that it be recommended to the legislature to eliminate from the law the section requiring fire insurance in the amount of $5,000, insuring clients of termite operators against fire or explosion incidental to termite control service.

Mr. R. P. Colmer, Mississippi State Plant Board, spoke of the relations of his board and the Mississippi operators, mentioning the agreement among the operators to a code of ethics, with special emphasis on eliminating disparaging remarks toward competitors and refraining from knowingly inspecting property under contract to, or guarantee by other firms. Following the discussion, H. S. Adair and G. H. Burnett were appointed to bring to the next meeting a suggested code of ethics for the group, based on the Mississippi code and that of the National Pest Control Association.

Mr. Livingston paid his compliments to the fine work done by the National Pest Control Association and recommended membership and attendance of the conference as a very worth while activity for all present.

A committee was appointed to arrange the next meeting for the second Saturday in June with Montgomery chosen as the meeting place.

All enjoyed the dinner which followed, as guests of the officers, Mr. Krawcheck and Mr. Bentley.

Registrants at Alabama Pest Control Operators Meeting, Redmont Hotel, Birmingham, Ala., March 10, 1945

Rufus Hanson, Orkin Exterminating Co., Birmingham, Ala.
J. C. Ryan, Orkin Exterminating Co., Birmingham, Ala.
O. R. Neighbors, Orkin Exterminating Co., Birmingham, Ala.
W. M. Little, Home Termite Co., Birmingham, Ala.
R. P. Colmer, State Plant Board, State College, Miss.
B. P. Livingston, Department of Agriculture, Montgomery, Ala.
K. P. Morris, Department of Agriculture, Eva, Ala.
G. E. Smith, Orkin Exterminating Co., Birmingham, Ala.
E. Mosley, Orkin Exterminating Co., Birmingham, Ala.
G. D. Sewell, Home Termite Co., Birmingham, Ala.
J. M. Robinson, Dept. of Zoology-Entomology, Auburn, Ala.
A. S. Krawcheck, Orkin Exterminating Co., Birmingham, Ala.
B. C. Carmichael, Allaire-Woodward Co., Peoria, Ill.
G. H. Kelly, Orkin Exterminating Co., Birmingham, Ala.
Mrs. Neva Barnes, Home Termite Co., East Gadsden, Ala.
Ada L. Hutcherson, Sunshine Termite Co., Gadsden, Ala.
J. M. Bunn, Home Termite Co., Anniston, Ala.
C. M. Morris, Orkin Exterminating Co., Birmingham, Ala.
H. S. Adair, Adair's Insect Control Ser., Montgomery, Ala.
Paul Fulkerson, Orkin Exterminating Co., Birmingham, Ala.
Hollis Bentley, Home Termite Co., Huntsville, Ala.
Jeanne Link, Home Termite Co., Montgomery, Ala.
Ruth Garnett, Home Termite Co., Montgomery, Ala.
G. H. Burnett, Getz Exterminators, Inc., Atlanta, Ga.
Rosalie W. Rosenthal, Orkin Exterminating Co., Birmingham, Ala.
A. B. Hillingsworth, Orkin Exterminating Co., Montgomery, Ala.
C. D. Bentley, Home Termite Co., Montgomery, Ala.
G. A. Orum, Dept. of Agriculture, Montgomery, Ala.
W. H. Longshore, Dept. of Agriculture, Florence, Ala.
M. A. Hickman, Orkin Exterminating Co., Birmingham, Ala.
O. M. Skipper, Home Termite Co., Montgomery, Ala.
Joe Lane, Home Termite Co., Montgomery, Ala.
Lorraine Bentley, Home Termite Co., Montgomery, Ala.
William Roniotis, Termonox Compound Co., Birmingham, Ala.
W. J. Newsom, Newsom Pest Control, Birmingham, Ala.
B. F. Numelley, Orkin Exterminating Co., Birmingham, Ala.
G. H. Boley, Orkin Exterminating Co., Birmingham, Ala.
J. E. Davidson, Orkin Exterminating Co., Birmingham, Ala.
U. G. Haynes, Dept. of Agriculture, Boaz, Ala.

A. W. Bevernick Elected Vice President of R. J. Prentiss and Co., New York

R. J. Prentiss and Co., New York, N. Y., importers and processors of Botanical Drugs, Chemicals and Insecticides, announces the election of A. W. Bevernick, as Vice-President of the Company.

Mr. Bevernick joined the Prentiss organization in 1934 and has served in the capacity of Western Manager for the past ten years.

Mr. Bevernick has a very wide acquaintance in the Stock Remedy, Botanical Drug and Chemical trade throughout the country and his many friends will be interested in his appointment as a Vice-President of R. J. Prentiss and Co. Mr. Bevernick will continue in Chicago with offices at 9 South Clinton Street.

Female Mosquito's Song Played On Record To Trap Eager Males

A new weapon in the war against mosquitoes, in which the sex of the insect has a vital part, was promised on April 3, by Dr. Morton C. Kahn, associate professor of public health and preventive medicine at Cornell University Medical College, York Avenue and Sixty-eight Street, New York.

Sound—and the eagerness of the male to respond to the love song of the female—are factors which promise a new approach to the problem of mosquito eradication.

"All of this is quite simple, though unique in the war against mosquitoes and the diseases which they carry," said Dr. Kahn. "We simply trapped and recorded the noises of the four most common species. Now we propose to trap the mosquitoes." This recording of mosquito sound is the first successful experiment of its kind, he said. . . .

The experiments were carried on for more than a year under the direction of Dr. Kahn, assisted by William H. Offenhauser and William Celestin and were described as an experiment in the "recording of sound produced by disease-carrying mosquitoes and possible significance in control." . . .

The mosquitoes were kept in cages in the Cornell laboratories and were fed regularly by laboratory attendants, who simply thrust in a hand and allowed the mosquitoes to draw their fill of blood. The sound of the insects was recorded in a sound-proofed box—originally a frosted-foods display cabinet picked up locally and insulated with rock wool. This was the job of Mr. Offenhauser, who is an engineer. Sound made by the insects were then recorded through a microphone and amplified of great power.

One female was recorded and the sound, when back over the recorder to a cage full of males got a response that sounded something like a pack of dive bombers in full attack. . . .

It is contemplated to trap the male mosquito in a device in which the recorded voice of the female will be played. The laboratory is building such a trap, but the results are not to be announced at this time, said Dr. Kahn. Such a trap would be of advantage in a thickly populated region, such as New Jersey, he said, where the effectiveness of the DDT formula is greatly impeded. "DDT has worked wonders in the jungles," said Dr. Kahn, "but we haven't been able to employ it with the same freedom in populated areas."

—N. Y. Herald Tribune.

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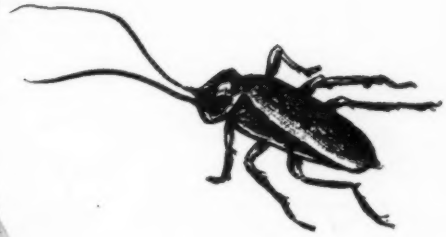

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LOCAL ORGANIZATION NEWS

Arthur A. Beliveau, Newly Elected President Pest Control Operators of California, Inc., Reports on Plans

One of the biggest, small, well-planned and managed conferences held yet was in Fresno several weeks ago, and proved to all of us that the PCO of California, Inc. (after having been formed into grand shape by the past officers), ably headed by J. E. McNatt and A. E. Eddy, is now marching on. . . .

The first thing on the list in a President's job, as I understand it, is to organize and appoint committees. . . .

. . . There will be ten active committees and to get wide representation the committee members will be chairmen of similar committees in each district. . . .

One of the first committees to function under the able direction of Ernie Mills is a legislative committee. Ernie, as always, is on the job and is working hard to get the resolution regarding suspension of the clause for Field Representative in the Departmental bill. . . .

One of the important committees this year, which I am looking forward to seeing do a great deal of work for the association, is the Public Relations Committee. All of us realize and know that we have been lax in letting the public know our side of the story, and consequently, we have in a greater or lesser degree suffered.

. . . Now is the time to start publicizing our story so that we can capitalize on it after the war when conditions change. . . .

Each district can start right now in public relations work, by having newspaper articles published about their meetings, election of officers, speakers and other subjects. Speeches can be made before the real estate and loan associations, banks, etc. Also advertising can be done. And then, we have our pest control picture, which many of us have seen and all agree that it is the finest of this kind. It is ready to be sent to any district so that it may be shown to your service clubs, P-T-As, schools, real estate and loan associations. . . .

I am also now working, with the able assistance of our Secretary, Jess Miller, and a few others, to complete the organization of the districts. . . .

Several of us fellows made a trip to the San Bernardino-Riverside district the other night. This, as you know, is our newest district and we can see from the way the meeting was conducted the other night under the good guidance of our friend, Mr. Frazier, that this district is going to town.

Since Charlie Delk and his committee did such a grand job at the last conference, I believe it would be a splendid idea to have a mid-year confab, which would be attended by all committeemen, directors and officers. This would give all the men concerned a chance to review things for half of the year and also to make better plans for the remaining half.

Annual Meeting Pest Control Operators of California, Inc., Held in Fresno, Calif.—Elect Officers

Pest Control Operators of California, Inc., convened for its annual meeting in Fresno, Calif., on February 24, where delegates of all local district associations of the statewide organization discussed various problems confronting the industry in California.

Membership of the San Bernardino-Riverside District Association was approved and it was accepted into the state association. W. L. Frazier of San Bernardino, chairman of the district, was elected to second vice-presidency of the state association. Other officers of this district are: Ted Snyder of Riverside, vice-chairman; G. B. Warders of Uplands, secretary, and V. E. Murdock of Redlands, treasurer. Ten members of this district signed the petition and paid their dues into the state treasury.

E. G. Mills of San Francisco, chairman of the Legislative Committee, gave a report on a compromised arrangement that had been agreed to regarding the enactment of a protective clause into the present State Structural Pest Control Act referring to Field Representative. The report, including the actual wording to be placed into the present assembly Bill 226, was approved by the association.

Jess M. Miller of the Los Angeles District, presented the advertising code which had been adopted by the Los Angeles District Association. This code was unanimously approved.

Officers elected for 1945 were:

President—Arthur A. Beliveau, of Alhambra.

First Vice-President—Ray V. Haneberg, of Oakland.

Second Vice-President—W. L. Frazier, San Bernardino.

Secretary—Jesse M. Miller, of Hollywood.

Treasurer—Hugh C. Smith, of Los Angeles.

The foregoing officers, together with the following state directors, attended meeting called by President Beliveau at the conclusion of the annual meeting: Arthur Eddy, Oakland; Charles C. Delk, Fresno; William Hogan, Pasadena; R. C. Gray, North Hollywood; Glen Fisher, Los Angeles, and G. B. Warders, Uplands.

The banquet which followed the annual meeting was enjoyed by all, with President Beliveau serving as master of ceremonies. An hour's entertainment by an accomplished group of G.I.'s from a local camp provided plenty of laughs and good entertainment. Singing and dancing followed.

Pacific PCO's Conference and Annual Meeting of PCO's of California, Inc., Held at Fresno, Calif.

Under the able chairmanship of Charles C. Delk, and his local committee comprising R. B. Carl and C. P. Cain, the Pacific PCO's Conference and the Annual Business Meetings of the PCO's of California, Inc., were held in the Fresno Hotel, Fresno, Calif., February 23.

The Pest Control Operators Conference was chairmaned by S. S. Heaton of Oakland, who developed a constructive program that covered the afternoon and evening of Friday, February 23. "What Was New in the Way of Chemicals for the PCO" themed the conference. DDT was the main topic of discussion during the afternoon with effective uses of the new insecticide adequately discussed. Ample time for discussion was allowed at the expiration of each talk.

The speakers who brought the subject of DDT before the conference were: Dr. W. M. Hoskins, Professor of Entomology, University of California—"History of DDT and Its Chemical and Physical Properties"; Professor E. O. Essig, Head of the Division of Entomology and Parisitology, University of California—"Practical Uses of DDT"; and Dr. A. J. Cox, Chief of Department of Chemistry, State Department of Agriculture—"The Registration and Sale of DDT in the State of California, and the various 'Trade Names' that it will be sold under; also the availability of this product as to immediate use."

Following the discussion of the merits of DDT, Dr. A. E. Michelbacker, Professor of Entomology of the University of California, gave a most interesting paper on "Household Insects," which was followed by a discussion, bringing to light many points of interest to the pest control industry. Dr. M. A. Stewart, Associate Professor of Entomology and Parisitology, University of California, and also the chairman of the Conference Committee of the University, acted as chairman of the after-dinner meeting, and spoke on the subject: "Public Health Responsibility of the Pest Control Operator," after which a general discussion followed. One of the main points that was stressed by Dr. Stewart was the cooperation of the pest control operator with his local health department in working out the various community health problems for the good of the public health.

Names and Addresses of the Officers of the State Association Pest Control Operators of California, Inc., and Each District Association of the State-Wide Organization

President: Arthur A. Beliveau, 720 Palm Ave., Alhambra, Calif.
Vice-President: Ray V. Haneberg, 3723 Telegraph Ave., Oakland 9, Calif.
2nd Vice-President: W. L. Frazier, 384 "D" Street, San Bernardino, Calif.
Secretary: Jesse M. Miller, 1631 N. La Brea Ave., Hollywood 28, Calif.
Treasurer: Hugh C. Smith, 907 N. Western Ave., Los Angeles 27, Calif.

San Diego District Organization

Chairman: E. E. Greene, 810 West "E" Street, San Diego 1, Calif.
Vice-Chairman: C. A. Look, 3754 Ray Street, San Diego 4, Calif.
Secretary: N. E. Raleigh, 3829 30th Street, San Diego 4, Calif.
Director: C. J. Scherrer, 4249 36th Street, San Diego 4, Calif.

San Bernardino-Riverside District Association

Chairman: W. L. Frazier, 384 "D" Street, San Bernardino, Calif.
Vice-Chairman: T. R. Snyder, 4428 Magnolia Street, Riverside, Calif.
Secretary: G. B. Warders, 126 N. Second Street, Uplands, Calif.
Treasurer: V. E. Murdock, 507 E. Citrus Ave., Redlands, Calif.
Director: G. B. Warders, 126 N. Second Street, Uplands, Calif.

Los Angeles District Association

Chairman: Hugh C. Smith, 907 N. Western Ave., Los Angeles 27, Calif.
Vice-Chairman: J. D. Fobes, 1450 Yosemite Drive, Los Angeles 41, Calif.
Secretary: D. M. Eason, 3537 Sierra Vista Ave., Glendale 8, Calif.
Treasurer: R. M. Dewey, 2777 W. Sixth Street, Los Angeles 5, Calif.
Director: A. A. Beliveau, 720 Palm Avenue, Alhambra, Calif.
Director: G. H. Fisher, 2300 Beverly Blvd., Los Angeles 4, Calif.
Director: William Hogan, 150 E. Glenarm,

USE

PRENTISS' FORTIFIED RED SQUILL

FOR RODENT CONTROL

STANDARDIZED
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FORTIFIED
EFFECTIVE

R. J. PRENTISS & CO., INC.
80 JOHN STREET NEW YORK

MOVIE FILM

A remarkably stirring inspirational educational film; 106 scenes, 52 titles, 800 ft., 16 mm black 7 white silent, requiring 30 minutes to show.

The cast-in destructive action; moths, buffalo and black carpet beetles, powder post beetles, cockroaches, bedbugs, fleas, termites, ants, bats, rats, mice, etc.

Teach sales and service men the easy way.

Gain prestige and appreciation — build steady profitable business by showing film to Health, Food, and Sanitary Inspectors, men's service and women's clubs, associations and organizations, real estate boards, hotels, restaurants, groceries, groups in small towns, etc. $110.

Send for booklet
HENRY TURRIE
522 West North Avenue, Milwaukee 12, Wisconsin

PHOSPHOROUS PASTE

FOR ROACHES and RATS

SINCE 1874

J-O Phosphorous Paste is so compounded as to eliminate the hazard of fire and possesses advantageous qualities peculiar to itself. A properly made **Phosphorous Paste** such as **J-O** is absolutely safe to use. It cannot burn or set fire to other substances.

Phosphorous, however, remains basic in the compound because it is the most toxic chemical used in pest exterminating, being more toxic than arsenic, strychnine or thalium. Approximately one-tenth of a grain will kill a rat. Phosphorous is a slow poison, taking from 6 to 18 hours to kill. Due to its slow but positive action, the rat succumbs to this poison. He becomes very uncomfortable and, seeking fresh air and water, in most cases, leaves the premises and dies in the open.

For all species of roaches, this product is **UNEXCELLED.**

JOHN OPITZ, INC.
50-14 39th Street Long Island City 4, N. Y.
Manufacturers of Exterminating Products Since 1874

EXTERMINATORS
CHEMICALS

RUMETAN
ZINC PHOSPHIDE
FOR RAT CONTROL

With thallium sulphate difficult to obtain, try RUMETAN . . . the ideal poison for Rats, Mice and Mole Crickets. Effective and economical. Write for details.

Pfaltz & Bauer, Inc.
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Director: Jesse M. Miller, 1631 N. La Brea Ave., Hollywood 28, Calif.
Director: R. C. Gray, 867 Atchison Ave., Altadena, Cailf.
Director: N. C. Metcalf, 404 N. Camden Dr., Beverly Hills, Calif.

Fresno District Association

Chairman: R. B. Carl, 1209 Broadway, Fresno 1, Calif.
Secretary: C. C. Delk, 1025 Belmont Ave., Fresno 3, Calif.
Treasurer: C. P. Cain, 709 Mildreda Ave., Fresno 3, Calif.
Director: C. C. Delk, 1025 Belmont Ave., Fresno 3, Calif.

Oakland District Association

Chairman: S. S. Heaton, 4456 Penniman Street, Oakland 2, Calif.
Vice-Chairman: T. C. Sibert, 638 16th St., Oakland 12, Calif.
Secretary: E. H. Armstrong, 3015 Shattuck Ave., Berkeley 4, Calif.
Treasurer: F. E. Wilson, Box 397, Walnut Creek, Oakland 12, Calif.
Director: Arthur Eddy, 301 Monte Vista Ave., Oakland 11, Calif.

There are several district associations which are only partly organized at this time, due to wartime conditions that do not permit the members of the district areas to travel to and from their regular meetings. However, as soon as conditions will permit, these sections of the state will be represented the same as the sections of the state as herein above is shown.

The president, Mr. Arthur A. Believeau, is now formulating a list of members for the important committees for the ensuing year. This list will be published in the very near future.

Ontario Pest Control Association

The 1st Annual conference of Ontario Pest Control Operators was held at the King Edward Hotel in Toronto on March 19th, 1945.

The afternoon session was largely given over to business and organization work. The registration was 36.

The following officers were elected: President—W. S. Bomby, Toronto; Vice-Pres.—E. Gentle, Hamilton; Secretary—E. F. Abell, Toronto; Treas.—W. Meyers, Toronto. Directors: Harold Lees, St. Catherins; Mr. Halpern, Ottawa, and W. H. Hunter, London.

Following the afternoon session a banquet was held at the hotel at 6:30. Principal speaker was Dr. L. A. Pequegnat, Deputy Medical Officer of Health of Toronto. Other speakers were Dr. J. G. Cunningham, Director of Industrial Hygiene Province of Ontario; Mr. A. M. W. Carter, Director of Pesticides Wartime Prices and Trade Board, Ottawa; Prof. J. R. Dymant, Royal Art Museum, University of Toronto; Prof. E. R. Bellemare of University of Montreal gave a talk on Safety Measures in Fumigation. Prof. R. W. Thompson, Provincial Entomologist, Ontario Agricultural College, Guelph, gave a very interesting talk and demonstration of DDT on the German Roach. The evening session was finished by our new elected president, Mr. W. S. Bomby, who showed two reels of motion pictures on household insects.

It was decided that Ontario Pest Control Association would hold its conference each year early in December.

—Submitted by E. F. Abell, Secretary.

Professional Exterminators Association, New York City

Dr. Victor M. Froelicher of I. Geigy and Company addressed the professional group and their guests on DDT; its uses and abuses, at the March 19th meeting at the Hotel Commodore, New York City.

Dr. John B. Schmitt and Professor Robert Filmer of Rutgers University, New Brunswick, N. J.; William O. Buettner, representing the National Association, and George B. Lay of the U. S. Fish & Wildlife Service, spoke briefly. A representative of the Associated Hospitals of New York City spoke on the advantages of group insurance.

The attendance record including members and guests totalled 94.

Mr. M. H. Oachs, PEA vice-president, summed up the attitude of the professional group by saying that, while we welcomed new members, the association and its membership felt a man's first duty to himself and to the industry, was to join the National Pest Control Association first.

Tentative plans were made for future meetings, including talks on roach powders by Mr. Philip Mayers, Jr., and the dog tick by Mr. Charles Pomerantz. The last two named had spoken on these subjects at the Massachusetts State Conference in February and generously offered to repeat their talks.

The educational program of the association has brought increased inquiries for membership and the membership committee reports favorable progress.

WHAT'S NEW IN PEST CONTROL-PERSONALS

MR. AND MRS. RICHARD DODGE announce the birth of a daughter born March 23, 1945 in Portland, Maine—7 lbs., 10 oz., weight. Richard Dodge, Jr., age 13 years, feels Ruth Elizabeth (her name) will be able to "handle the phone" by the time he starts working on his Degree in Entomology . . . at Massachusetts State College.

PARADICHLORBENZENE: As per an amendment to Order M-340, issued by WPB on March 26, Paradichlorbenzene may not be used in moth products, deodorant blocks or crystals, or for other insecticidal purposes except of an agricultural nature.

CAPTAIN WALTER W. DYKSTRA, formerly of the Predator and Rodent Control Division of the U. S. Fish and Wildlife Service, and participant in a number of NPCA meetings especially in the New England sector, has been returned to this country to take an advanced officers' course in Kansas. It is anticipated that shortly after the conclusion of the 10-week course, Captain Dykstra will return to the Pacific area for one and one-half years more active service.

Several offices in the METROPOLITAN OPERA HOUSE in New York have had to be closed because of termites, according to Columnist Leonard Lyons in the New York Post.

Congratulations to Mr. and Mrs. Emanuel Russell who, on April 13th, celebrated their 13th wedding anniversary. The Russells operate the Better Service Fumigating Company in Detroit.

Sincere expressions of sympathy have been expressed to the family and his many friends with the announcement of Mr. A. K. Montag's death on April 2nd. Mr. Montag for several years had been associated with the office of W. J. Parker and was active in the affairs of the New York Pest Control Association.

From somewhere in the Philippines, where he is stationed at a submarine base, NAVAL RADIOMAN LE ROY WEISBURGER writes he is well and sends greetings to all his friends in the Industry. Before enlisting LeRoy was with the well-known insurance firm of B. & D. A. Weisburger, New York.

TERMITE OPERATORS ARRESTED

On March 31 State Police and White County officers, Arkansas, arrested J. H. Tyrone and A. B. Wingo near Searcy when they were found treating houses for termites without having a state license as required by Act 394 of 1939. The men were operating as the Delta Termite Company of Blytheville, Arkansas. They were released on a $300 bond.

Plant Board inspectors who examined several houses which they had previously treated reported that termites were still present in some of the houses, while others had apparently never been infested. Prices charged for treatment ranged from $150 to $250 per building.

Act 394 of 1939 requires that all termite and other pest control operators must have a license issued by the Plant Board. Applicants must demonstrate to the Board their ability to do satisfactory work before a license is issued.

Under the provisions of Section 3, Act 394 of 1939, the license of the Southern Termite Control, Earle, Arkansas, has automatically become invalid because the company no longer has an authorized operator in its employ.

CONGRATULATIONS TO THE WEINTRAUBS! Premiere of their latest production, MATTHEW JOEL, acclaimed by critics; long run predicted. Program follows:

THE WEINTRAUBS
present
A MUSICAL EXTRAVAGANGA
In One Act

Lyrics By.....Matthew Joel
Produced By.....Mark Weintraub
Staged By.....Ruth Beatrice Weintraub

Cast of Characters
(in the order in which they speak)

The Mother.....Ruth Beatrice Weintraub
The Father.....Mark Weintraub*
The Doctor.....Harold Rosenfield
The Baby, Matthew Joel.....Himself
Ladies of the Chorus....Gogo, Jezebel, Jonquil

ACT I

Scene I

Midsummer. A house at 20½ Magnolia Ave., Magnolia, Massachusetts.

Scene II

Winter. A house at 21 Salisbury Rd., Brookline, Massachusetts.

Scene III

March 31, 1945, 11:36 P.M. Wyman House, Cambridge, Massachuetts.

COSTUMES

Vanta, Arnold Knit, Chix and Carters.
*Of the Astor Ext. Co., Boston, Mass.

DR. HAROLD H. SHEPARD, formerly of War Food Administration and the University of Minnesota, has taken up his duties as insect toxicologist in Department of Entomology at the New York State College of Agriculture, Cornell University, Ithaca, New York as of April 7. Doctor Shepard is taking over the duties formerly held by DR. T. R. HANSBERRY. Associated with him in the work is DR. L. B. NORTON in insecticidal chemistry.

NO RUSH ORDERS PLEASE
BEST DELIVERY 3 WEEKS

Due to the Labor Shortage in this Area and the Limitations Placed on Metal, we cannot render the prompt service as in the past. We regret any delay and assure you we will give the best service possible under present conditions.

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Buy U. S. War Bonds and Stamps

No. 1007 "Regular"

MICE-GLUE
GETS MICE LIKE FLYPAPER GETS FLIES
10 lbs. $6.00 25 lbs. $13.50 100 lbs. $45.00

BIRD-REPELLENT
Keeps Pigeons, Starlings and Other Birds from Buildings
10 lbs. $6.00 25 lbs. $13.50 100 lbs. $45.00

PHOSPHORUS-PASTE
For Rats, Mice and the Large Brown and Black Roaches
10 lbs. $4.25 25 lbs. $9.00 100 lbs. $32.50

PEST CONTROL CHEMICALS CO.
324 Broadway Write for Details BUFFALO, N. Y.

"TOX-EOL" 12½ TO 1 SUPER CONCENTRATE

NOW AVAILABLE WITHOUT PRIORITIES

FOR TERMITE CONTROL

Chlorinated Phenol Toxic Base, which has been effectively used for many years by the larger Termite Control Operators from Coast to Coast in the "TOX-EOL SYSTEM" of Termite Control.

This new super strong CONCENTRATE may be diluted with 12½ parts Fuel Oil, Kerosene, or even Crank Case drainings to make the proper strength (over 5%) treating solution.

"TOX-EOL" 12½ CONCENTRATE means lower transportation charges, fewer containers—lower chemical cost. Now costs less than creosote.

FOR WOOD OR SOIL TREATMENT

Write for our plan of dealer co-operation and 5 year Warranty.

CRE-O-TOX CHEMICAL PRODUCTS COMPANY

Pioneers in the use of Chlorinated Phenols for termite control.

MADISON AT WILLETT MEMPHIS 4, TENNESSEE

GREATER *Kills* with CERTOX
REG. U. S. PAT. OFF.

Rodent Seed, Ant Jelly, Arsenic, Carbolic, Pyrethrum, Cresylic, Red Squill, Derris Powder, and other effective chemicals that do a thorough job for the Pest Controller. The quality of CERTOX products remains unaffected by the national emergency. Prices, too, are near normal.

YOUR GUARANTEE:

All CERTOX products are manufactured according to exacting specifications under personal supervision of I. H. LUTTAN, B. S. A., Entomologist.

SPECIAL CONTRACT PRICES Available to Cover your Annual Needs.

YORK CHEMICAL CO.
Suppliers of Complete Exterminating Chemicals.
424 West 18th Street, New York, N.Y.

CENTROBULBS
12 oz. 8 oz. . . . 4 oz.

From experimental stage to perfection.

Better than pre-war.

Bulb made of synthetic rubber.

Works better, lasts longer, snappier.

Oil and grease resisting.

Perfect invisible seams.

Nozzle made of heavy die-cast metal with cut threads.

Wire screen restored.

Large opening for quick refilling.

Made to form-fit hand of pest control operator.

In dozen lots or more of a size

12 Oz.	$9.00 doz.
8 Oz.	7.20 doz.
4 Oz.	3.00 doz.

F. O. B. New York

Central Rubber Products Co., Inc.
821 Broadway New York 3, N. Y.

As exclusively predicted in this column several months ago, NORMA and MARTIN MEYER of Philadelphia have been blessed with the birth of a son. Arriving at dawn on April 3, JAMES MARTIN weighed 7 lbs. 11½ ozs. His Dad is head of Theodore Meyer Est., and a director of the NPCA. Congratulations and well wishes to the Meyers who now number four.

CHEMICAL FACTORY BURNED—The chemical manufacturing plant of the James Good Company, Philadelphia, was damaged seriously by a two-alarm fire on April 14.

W. F. "BILL" AMANN, formerly of the United States Guard, has opened an office in the Brisbane Building, Buffalo, N. Y., where, he states, he will specialize in rat control. Tied in with his rodent-control operations, which will include ratproofing, says Mr. Amann, will be ready access to a plant manufacturing such pre-cast concrete products as concrete garbage containers, rat-proof curtain walls, etc.

THE FOBES DO IT AGAIN: Mrs. Joyce Fobes, wife of the vice-chairman of the Los Angeles District Pest Control Operator, was blessed with a baby boy, 6½ lbs., on February 15. Junior will henceforth be known as Christopher John. Mrs. Fobes and baby getting along fine—to say nothing of Papa.

Congratulations to Mr. and Mrs. P. F. Flaig, who announced the birth of their son, Fred, Jr., who was born on February 20th.

Mr. Flaig operates the Naval Chemical Co. of Panama City, Florida.

SHE ACTED FAST AT PROPER TIME

PORTLAND—(UP) — Dorothy Ellington of Portland thought and acted fast at the right time.

The woman went into her kitchen, took down what she thought was peanut butter and spread a sandwich. As she was eating it she noticed a peculiar flavor.

Looking at the jar, she saw she was not eating peanut butter but ant poison.

She called her own ambulance, rode to a Portland hospital, was treated and returned home.

DEWEY SPARES STARLINGS: New York's Governor Thomas E. Dewey vetoed on April 16 a measure to permit poisoning, trapping and snaring of starlings by unlicensed persons when the birds became a nuisance. The State Conservation Department, in a report on the bill to the governor, warned that harmless and beneficial birds and animals would become victims of indiscriminate poisoning, trapping and snaring. Starlings now may be taken by other methods by farm families without license.

MORTARS VS. MOSQUITOES: Mortars now being used in Europe may be converted for use in killing New Jersey mosquitoes, it was suggested by Dr. R. D. Glasgow of Albany at the closing session of the New Jersey Extermination Association convention. The idea, however, is not to aim the mortar at any specific mosquito and let fly. Instead, the shell would be charged with insecticide dust, which would thus be dispersed over a wide area.

—N. Y. Herald Tribune.

BLUE of a certain chroma is known to be nauseating to certain insects. In Holland they make use of this known fact by painting the meat packing houses blue. In the South Pacific, blue beads are strung and hung over doorways to repel insects where screen wire was not available.

17-YEAR LOCUSTS STIRRING: Beneath the placid soil of New Jersey are millions of red-eyed cicadas, eating tree roots. They have been doing just that for seventeen years, and the State Department of Agriculture has kept careful tabs on them. The department announced on March 28 that the red-eyed cicadas, otherwise known as 17-year locusts, are becoming restless, after the tradition of their kind, and will be out in force in about two weeks. They will infest New Jersey until early July, then go back to their unrationed diet of tree roots.

—N. Y. Herald Tribune.

YOU CAN STILL SLAP 'EM: The New Jersey mosquito, which has survived the onslaughts of scientists, irate sufferers and vaudeville jokes, will succumb to DDT, the Army's new insecticide, H. H. Stage, of the Department of Agriculture, told the New Jersey Extermination Association on March 28, according to the N. Y. Herald Tribune. The insecticide will be spread by airplane, although some killing will still be done by the swear and slap method.

DDT TOXICITY: "Further Studies on the Pharmacologic Action of 2,2 Bis (P-Chlorophenyl) 1,1,1 Trichlorethane (DDT)," by M. I. Smith, Chief Pharacologist, and E. F. Stohlman, Associate Pharmacologist, United States Public Health Service, appears in Public Health Reports, Vol. 60, March 16, 1945, No. 11.

"O wad some power the Giftie gie us
To see oursels as ithers see us.
It wad frae monie a blunder free us,
An' foolish notion."

—Robert Burns.

"To a Louse—on Seeing One Upon a Lady's Bonnet in Church."

MOUTHFUL—Irving Caesar, Hollywood writer, put it perfectly right:

Nowadays you don't build a better mousetrap; you get a better mouthpiece.

USE POISON GAS IN WAR ON RATS—City Manager Henry Traxler has approved a one-year contract with Janesville Exterminators, Janesville, Wis., a local exterminating concern for regular monthly treatment at the two city dumping grounds on N. Bluff and S. Jackson streets.

Herbert Burger, city sanitary inspector, reported today that cyanide gas treatment of the dumping grounds would be applied once monthly, about the 15th, and that the areas would be baited once each month, around the 1st.

Numerous experiments have been made in an attempt to determine the best way to rid the dumping grounds of the rat menace and the gas method is believed most successful. Cyanide gas is forced into the rat holes and past experiments have shown that thousands of rats are killed by each treatment.

MOSQUITOES: Mosquitoes mean sometimes a stoppage of work in war plants. So the Merchant Plant of the Westinghouse Company decided to do something. First the mosquitoes had to be counted. They were drawn in with the aid of a suction fan. Whereupon they passed into a cyanide chamber and were killed. Counting dead mosquitoes was then easy. Next a portable aerosol dispenser was wheeled on a regular route through the plant to cover every cubic foot. Its blower dispersed DDT mixed with solvents.

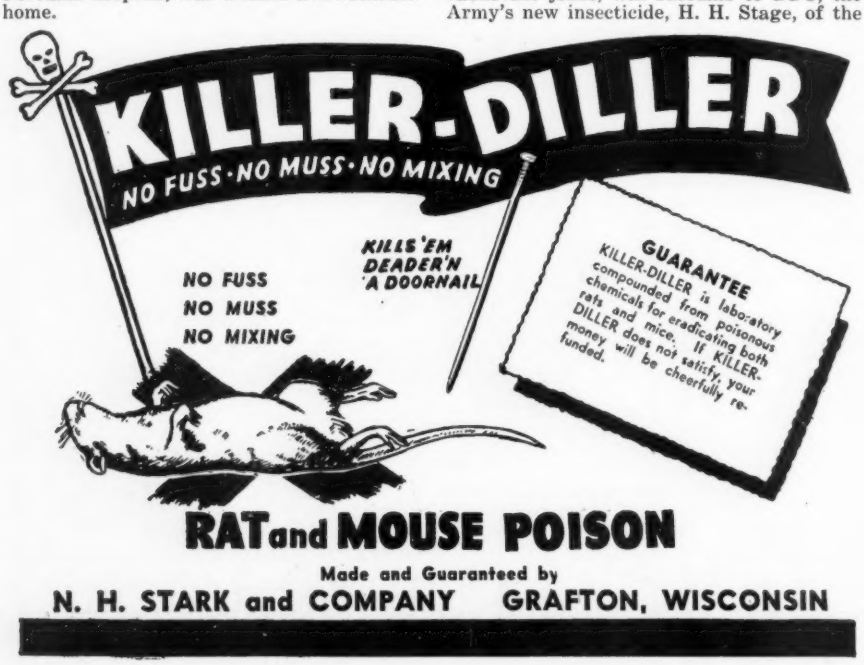
—N. Y. Times.

SABADILLA SEED INSECTICIDE—Use of sabadilla seed, a species of lily, as an insecticide shows promising results. Tests were made against the most common crop-damaging insects, and in comparison with insecticides prepared from rotenone, pyrethrum or arsenicals, and in one instance, DDT, Sabadilla seed has been used as a medicinal and for the destruction of body vermin for years.

—Inside News.

Mort Levy, son of Max J. Levy, who operates the Twinn City Exterminating Co. of St. Paul, Minn., was awarded the Bronze Star for special services with Patton's Third Army.

We are always glad to hear from our boys who are valiantly rendering service for our country.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NO FUSS · NO MUSS · NO MIXING
KILLS 'EM DEADER'N A DOORNAIL
NO FUSS
NO MUSS
NO MIXING
GUARANTEE
KILLER-DILLER is laboratory compounded from poisonous chemicals for eradicating both rats and mice. If KILLER-DILLER does not satisfy, your money will be cheerfully refunded.

RAT and MOUSE POISON

Made and Guaranteed by

N. H. STARK and COMPANY GRAFTON, WISCONSIN

ADVERTISING IS NEWS

Never before have PCO's looked so eagerly to advertising for information, whether it seeks to produce sales, build good will, give advice on the use and care of the material advertised in Pests—or whatever advertisers have to offer to PCO's, your advertising is news. And the most natural and effective place to reach PCO's is PESTS . . . the primary source of information for PCO's.

A GOOD JOB DONE

PER-MO-BITS

Scientifically Prepared For

RATS-MICE-MOLES

Made with tested Red Squill

A product that is effective, dependable and ready to use.

Safe to use—non-poisonous to humans, pets, domestic animals, etc.

A try sample size for $1.00—send for one today.

Packed 8 oz., 16 oz. or bulk.

4 to 1 Concentrate FOR RATS AND MICE

(Just Dilute With Water)

Per-Mo Rat and Mice Liquid can be used as a drink or can be mixed with any food and used as a bait.

ECONOMICAL TO USE

Send $1.00 for a 16-oz. Bottle CONCENTRATE RAT & MICE LIQUID. Postage Prepaid.

PENETRATE—

YOUR TERRITORY WITH THE

MOTHPROOF LIQUID THAT "PENETRATES"

Now that woolen conservation is so vital to "UNCLE SAM'S" war program, there is still greater need for Moth protection. You can help "America" protect its valuable woolen materials by selling "PER-MO" Mothproofing Service. Full particulars and prices first letter.

Per-Mo. Mothproof Company

3729 Virginia Ave. Kansas City 3, Mo.

Introducing

A NEW

Organic Insecticide for Crawling Insects

NH INSECT DUST

A NITRATED HYDROCARBON DERIVATIVE

1. Has quick action and "drive out."
2. Kills insect eggs in addition to acting like a Pyrethrum-Sodium Fluoride combination.
3. Gives high kill and long residual action.
4. Costs less than Pyrethrum powder.
5. Eliminates the hazard of using highly poisonous powders.
6. Ideal for packagers of "Roach Powders" or for service work against roaches, bed bugs, ants, silverfish.
7. Offered to you only after our customary careful laboratory and field studies, including months of practical trial by numerous Pest Control Operators.

PYRISCENTS—If you have a perfuming problem, investigate these specially compounded insecticide perfumes. Pyriscents are available in many odors and are completely oil soluble.

"ASK US FOR A SAMPLE"

JOHN POWELL & CO.

One Park Avenue

New York 16, N. Y.

ACME GAS MASKS

Provide Fumigators with SAFETY — COMFORT and FULL VISION

Every Fumigator knows the importance of protecting his own life while working with poisonous fumigating gases and chemicals. The Acme No. 4 Gas Mask provides that protection with Non-Distorted FULL VISION, Safety and Comfort.

The Acme Canister provides protection against any fumigating gas, or combinations of gases. Write for literature and prices.

BUY WAR BONDS OFTEN

ACME PROTECTION EQUIPMENT CO., INC.

Manufacturers of Respiratory Protective Devices

3616 LIBERTY AVENUE PITTSBURGH, PA

BOOKS

Please remit check with order as this will save additional expense and time.

A list of new books includes:

People
Price $2.50 plus 15c postage

Chemistry of Insecticides and Fungicides
Price $4.00 plus 15c postage

Manual for the Study of Insects
Price $4.00 plus 15c postage

Step Out and Sell
Price $1.50 plus 15c postage

Helping People Buy
Price $2.50 plus 15c postage

Strategy In Selling
Price $6.00 plus 20c postage

Outlines of Entomology by Dr. Imms
Price $3.75 plus 15c postage

"A Manual for the Study of Insects"

This book of 401 pages and 633 illustrations is now in the twenty-first edition. Much space is given to accounts of the life histories and habits of insects. By means of the illustrations and analytical tables it is possible to determine the identity and classification of the common North American insects.

The Book Sells for $4.00 plus 15c postage.

Virus Diseases in Man, Animal and Plant

A survey and reports covering the major research work done the last decade.

The book gives a survey of the monetary status of virus investigation with special consideration of the most recent literature, especially foreign. One of the most important books of its kind offered.

Price $5.00 plus 15c postage

Unbidden House Guests

By DR. HUGO HARTNACK

The volume discusses about 2,000 house guests. It consists of 4 parts:

I. General Part: What are housepests today? Borderlines of Housepest field. Climate of the House. Housepests worldwide. Influence of the house on the housepest. Spoorology (Diagnostic) of **Housepests.** Damage by housepests (54 pages of pictures). Pests and Wastes. Fighting housepests outdoors. Exterminating methods. Formulae. Pages: 238.

II. Plants as Housepests. Bacteria. Molds which live in the house. Timber rot, fungus. What plants do to housepests and what housepests do to plants and plant products. Pages: 62.

III. Lower Animals. Protozoa, worms, snails, millepedes, spiders, mites, many others, as far as they are housepests. Pages: 112.

V. Backboned Animals. Chordata, coldblooded and warmblooded. Rodents, rats and mice take 54 pages. Formulae. Index. Pages: 148.

Price $12.00, plus 25c postage

WRITE FOR THESE BOOKLETS

The latest helpful information service literature will be sent to you without cost or obligation. If, in addition, there are any particular pieces of literature offered by advertisers in this issue you are interested in receiving, either write them direct, or if you prefer, please send us such requests.

Please note, however, that you must request each booklet on a separate letterhead though they may all be mailed in one envelope addressed to Pests, 126 Lexington Avenue, New York City, N. Y.

ODORLESS DEODORANT—This all-purpose home and commercial deodorant, it is stated, kills odors by absorption, not by superimposing another odor. It is also stated to be non-toxic, non-poisonous, non-caustic, non-inflammable, non-corrosive and harmless to man, animals and birds. Effective in the elimination of offensive odors.
WRITE PESTS—X-ODOR.

Fortified Red Squill circular, which includes bait chart, describes a Fortified Red Squill powder activated and standardized to meet recommendations of the Fish & Wildlife Service for a minimum lethal dose of 500/600 mg/kg of rat.
WRITE PESTS—PRENTISS.

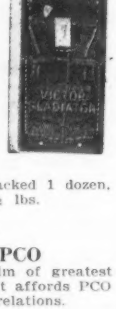
CONTROL OF TERMITES-POWDER-POST (LYCTUS) BEETLES-DECAY

Circular discusses properties and uses of Permatox A in termite control and its application to soil and wood to control termites, decay control, powder-post beetle prevention and control. Description of Parmatox T and its uses in termite control, as a soil poison, are also discussed, together with toxicity.
WRITE PESTS—BULLETIN 43-T.

Inquiries invited from pest control operators interested in New Big 6 Line of Wizo Moth Killer Vaporizers and Crystals. Catalog describing each product fully and prices available.
WRITE PESTS—ELKAY.

VICTOR GLADIATOR METAL RAT TRAP

The Victor Gladiator Rat Trap is made of 22 Gauge Steel, Gun Metal finish. Equipped with strong double-coil spring made of 15 gauge oil tempered spring wire. heavy wire work throughout. Note holes in base for nailing to floor, rafters, or wall.



The Victor Gladiator has been designed especially for professional use by public health officers, sanitary officers of the armed forces, and pest control operators. It is of rugged construction and is particularly adapted to outdoor use; especially recommended for the tropics and on shipboard, not readily affected by continuous contact with moisture.

Actual size 7⅛x3⅝x½". Weight, packed 1 dozen, 4½ lbs. Weight, packed 6 dozen, 29½ lbs.
WRITE PESTS—VICTOR.

FILM OF VALUE TO PCO

Circular describes a vivid action film of greatest value to every PCO and opportunities it affords PCO to build good will and better public relations.
WRITE PESTS—WIL-KIL.

ANT BAIT

Circular describes a jelly ant bait with Thallium Sulphate as its toxic ingredient. Comes packed in sizes convenient for resale or professional use. Sample tube on request.
WRITE PESTS—LETHELIN.

Phosphorous Paste killing power; baits, combinations, amounts for the control of roaches, mice, rats are discussed.
WRITE PESTS—OPITZ.

FUMIGATION SAFETY RULE

A review of fumigation accidents of record for 1943 shows that oversight or disregard of rule to lock all doors and accessible windows, failure to place warning signs thereon and failure to post guard during fumigation account for approximately 20% of the accidents. Bulletin discusses ways and means to eliminate accidents of this nature.
WRITE PESTS—AC No. 80.

PRESERVATION OF MILLWORK AND OTHER DRY WOOD PRODUCTS

Bulletin discusses composition of Permatox B Concentrate and its application in the preservation of millwork and other dry wood products.
WRITE PESTS—PERMATOX 43-B.

SODIUM SILICO FLUORIDE

Bulletin describes sodium silico fluoride product with proper density. Effective manner of testing for presence of HCN after ventilation also discussed.
WRITE PESTS—AC 70.

Fumigation manual. 76-page manual describes safe handling and working with "Cyanegg" and on fumigation procedure and insect control. Illustrated.
WRITE PESTS—DuPONT.

GAS MASKS—RAT CONTROL PROGRAMS

Bulletin offers some pertinent suggestions regarding gas masks and how to keep them in perfect condition. It also discusses rat control programs and what the PCO can do to further them.
WRITE PESTS—AC 82.

THE ACTIVATING EFECT OF PYRETHRUM UPON THE GERMAN COCKROACH

Research material prepared by John M. Hutzel, of the Ohio State University, Columbus, Ohio in cooperation with the Kenya Pyrethrum Extension Service, Inc., N. Y. Supervised by Professor F. L. Campbell.
WRITE PESTS—PYRETHRUM.

THE MODERN TREATMENT OF CYANIDE POISONING

This brochure, written by KK. Chen, M. D., Charles L. Rose, B.A., and G. H. A. Clowes, Sc.D., and reprinted from the Journal of the Indiana State Medical Association, discusses The Modern Treatment of Cyanide Poisoning. Contents include: Sources of Poisoning and Mortality Statistics; Diagnosis; The New Treatment; A Suggested Procedure for Actual Treatment; Results to Date, etc.
WRITE PESTS—A-C CYANIDE.

NEW EDITION FUMIGATION MANUAL NOW AVAILABLE

The new edition of the Fumigation Manual pertaining to the use of Aero Brand HCN Discoids is now off the press. Every PCO should have one on hand as it is a ready reference and contains helpful and valuable information and suggestions.
WRITE PESTS—A-C MANUAL.

INSECT TRAPS

Bulletins describe traps for ants and roaches, with suggestions for their use.
WRITE PESTS—SOILICIDE.

RAT GLUE AND BOARDS CIRCULAR

RAT GLUE AND BOARDS CIRCULAR discusses use of rat glue boards as a means for effective rat control, etc.
WRITE PESTS—ELKAY.

PYRETHRUM - DERRIS - RED SQUILL PRODUCTS

Leaflet describes foregoing insecticides with special bait chart for use in connection with powdered red squill.
WRITE PESTS—PRENTISS.

RATS CAN'T RESIST THE NEW BAIT

VEGEX
DRY
GRAVY
as effective
as the best beef

Simply add water—boil up once—add poison—and it works like magic. Keeps indefinitely—needs no refrigeration. Safe to use.

One five-pound package makes five-gallon mixture—costs only four dollars. Four five-pound packages—fifteen dollars. Available in five-pound packages only.

VEGEX COMPANY
175 FIFTH AVENUE NEW YORK 10, N. Y.

Red Squill Rat and Mouse Killer

Booklet describes Red Squill rat and mouse killer made up in convenient package form for resale to public. Also illustrated are resale packages of dog repellent, moth killer, etc. Included in the booklet is reprint of an article on Red Squill by Leonard R. Parkinson, Agr. Exp. Station, Massachusetts State College.

WRITE PESTS—OHIO.

CALCIUM CYANIDE FOR RAT CONTROL

16-page booklet contains excerpts from official publications and reports of health officers throughout the world regarding use of calcium cyanide in the control of rats. The widely differing conditions surrounding infestations, and the specific types of control for each, which are described, will serve as suggestions to health officers and others in solving similar problems.

WRITE PESTS.

FUMIGATION SAFETY RULE

Bulletin discusses importance of personal inspection of entire premises immediately before releasing gas, and offers some constructive suggestions with respect thereto.

WRITE PESTS—AC 81.

NEW ANT TRAP

Manufacturer claims many new features such as no turning or twisting necessary; four openings; larger trap; contents ½ greater than any other competitive brand.

WRITE FOR YOUR FREE SAMPLE OF ANT TRAP TO NOTT, c/o PESTS.

INSECT POISONING AGENTS

"Thanite, quick death to insects" is a 12-page booklet presented in Basic English with a view to international use. It discusses the development and applications of the product.

WRITE PESTS—HERCULES.

ELECTRIC FANS HAVE SEVERAL USEFUL FUNCTIONS IN FUMIGATION WORK

Ways in which fans may be used to promote circulation and penetration of gas during fumigation are described in this bulletin.

WRITE PESTS—AC 84.

BIRD REPELLENT

Circular describes product which manufacturer claims will serve as an effective repellent against pigeons, starlings, bats, dogs, cats, rats, mice, woodchucks, moles as well as crawling and flying insects that prey upon plantings and seedlings.

WRITE PESTS—PX.

BOX CAR FUMIGATION

Folder describes box car fumigation with methyl bromide, giving details as to: car seal, applicator arrangement, methyl bromide application, dosage, exposure period, temperature, aeration, precautions.

WRITE PESTS—DOW.

PRESERVATION OF LUMBER, POLES, POSTS, PLYWOOD WITH PENTACHLORPHENOL

This bulletin gives a brief summary of the properties, use to date, and recommendations for the preservative treatment of lumber, poles, posts, and other forest products with Permatox A. This product, it is stated, has shown outstanding promise as an effective and permanent oil preservative for many wood products. Set forth briefly also, are recommendations for the effective preservative treatment of lumber, poles, posts, and other forest products with Permatox A, based upon experience to date.

WRITE PESTS—BULLETIN 43-A.

PIGEON-PROOFING

Folder describes pigeon-proofing invention which manufacturer claims will completely and decisively eliminate the pigeon nuisance. In use by real estate companies, churches, government buildings, etc.

WRITE PESTS—STANLEY.

FIRST AID AND TREATMENT FOR METHYL BROMIDE EXPOSURE

This valuable booklet, prepared by Dr. H. H. Gay, Medical Director, The Dow Chemical Company, Midland, Mich., outlines first aid and treatment for Methyl Bromide exposures. Contents are based upon what is believed to be sound medical practice. Digest follows: properties of Methyl Bromide, symptoms of Methyl Bromide exposure, first aid, suggested treatment by a physician, skin contacts with Methyl Bromide. Copy may be had by writing Dow direct, or

WRITE PESTS—GAY.

SAFETY IN FUMIGATION WORK

Fumigation Safety Rule No. 1; namely, "Vacate entire building even though only part is fumigated, as well as adjoining buildings into which gas may penetrate" is discussed in this bulletin.

WRITE PESTS—AG No. 78.

SOLVAY PRODUCTS

48-page booklet in colors and illustrated, covering their entire line of Alkalies and Special Products, with a special section dealing with Para-Dichlorobenzene and Ortho-Dichlorobenzene.

FREE COPY MAY BE HAD BY PEST CONTROL OPERATORS.

WRITE PESTS—SOLVAY, c/o PESTS.

LETHANE A-70

Folder discusses roach, ant and bedbug powders based on this new insecticide concentrate. Described are: safety factors, cost per application, killing power, performance data, residual activity, tenacity, etc.

WRITE PESTS—A-70.

SPECIAL ROACH POWDER

Circular describes a roach powder (containing Lethane A 70) which, it is stated, is fast acting, positive in kill and will not deteriorate for at least eight weeks after application. As a result, the supplier points out, the PCO does not have to service his customers as often, thereby conserving manpower. Moreover, it is stated, the powder is non-toxic to warm-blooded animals and may, therefore, be used in dairies, packing and food handling plants, homes, etc., in fact, in all places where sodium fluoride mixtures may not be used. . . . Described also is a sodium fluoride-Pyrane formulation for the PCO who wishes to make his own roach powder.

WRITE PESTS—BOSLEY.

SYNTHETIC ROACH POWDERS

Research material apropos thiocyanates in powdered form for roach control in place of pyrethrum—describes the development and properties of roach, ant and bedbug powder based on Lethane A-70.

WRITE PESTS—SYNTHETIC.

MILITARY FUMIGATION MANUAL

This special 48-page manual has been prepared for the benefit of officers and civilians in the Armed Forces who are responsible for vermin control, and for PCOs who may contract with the Armed Forces for fumigating work. Among other subjects, the manual discusses: dosage, preparation of building for fumigation, fumigation operation, common pests, cockroach control; precautions, first aid methods, etc.

WRITE PESTS—AC.

TERMITE CONTROL

Folder discusses concentrates available for two distinct methods of termite control: (1) treatment of timbers in place with an oil solution, and (2) treatment of all soil around an infested building or area with either an oil or water soluble chemical. Issuing company states it specializes in all problems concerning wood-destroying organisms and also wood preservation and invites your inquiries thereto.

WRITE PESTS—WOOD.

FUMIGATION SAFETY SUGGESTIONS

Of timely interest, in view of the at-hand fumigation season, is this bulletin which advocates as a safety measure the use of methyl orange-mercuric chloride test papers for the presence of HCN. It also discusses can openers for Zyklon Discoids, the need for adequate ventilation after fumigations, and gives a cautionary note on pilot lights in premises to be fumigated.

WRITE PESTS—AMERICAN.

STERILIZING GAS MASKS

News bulletin describes a chemical that is claimed by the manufacturer to be effective in sterilization of gas masks. Bulletin also discusses antidotes and first aid, particularly an inhalant which functions best as an antidote to HCN poisoning, and where obtainable.

WRITE PESTS—AC-73.

ALL-PLASTIC GOGGLE

Circular describes a new lightweight, all-plastic goggle which provides comfortable, durable protection for the eyes. The individual eye cups are moulded to fit the facial contours, giving a close yet comfortable seal around eye orbits, according to the circular. Particularly useful for spraying in termite control, as well as heavier bedbug spraying operations, to prevent direct sprays from getting into the eyes themselves—available in different models.

WRITE PESTS—MINE.

FUMIGATION AND PLASTICS

News release discusses use co-ordination of such diverse chemical products as plastics and fumigants in connection with infested bagged grain, seed, packaged or boxed foodstuffs. Methyl bromide-plastic-tarpaulin method of disinfestation described.

WRITE PESTS—DOW.

RESPONSE OF RATS MAINTAINED ON DIETS FUMIGATED WITH METHYL BROMIDE

Research material reprinted from Food Research

WRITE PESTS—DOW-RESEARCH.

DEODORANT

Catalog includes price data, etc., on deodorant which it is felt can neutralize and deodorize such toxic agents as Thanite, Lethane 384 Special, Velsicol, etc. Also contains data on perfume oils for sprays made with pyrethrum and kerosene.

WRITE PESTS—MAGNUS.

ELECTRIC FANS

Bulletin discusses value of electric fans in connection with fumigation work, also some pertinent thoughts on the Schafer Prone Pressure Method of Resuscitation, etc.

WRITE PESTS—AC-69.

NEW RAT BAIT

The current difficulty of procuring rat baits because of meat rationing has been overcome by the discovery on the part of numerous PCO's of Vegex Dry Gravy, states its manufacturer.

This product with a delicious meat flavor, and high in hydrolized vegetable protein seems to be an irresistable lure for rats, according to the same source.

It has many advantages. It is instantly prepared by simply adding water and boiling up once.

The prepared bait can be handily carried in the kit, and the bait need never be touched, as bread can be dipped in the poison mixture by tongs. Keeps indefinitely and needs no refrigeration, it is stated.

Results with Vegex Dry Gravy have been so good in rodenticide work, and the Gravy is so inexpensive and easily handled that PCO's who have used it are expecting, according to the supplier, to continue even after war rationing is a thing of the past.

The Vegex Company, located at 175 Fifth Avenue, New York 10, N. Y., puts up this Dry Gravy in 5-pound packages only. One 5-pound package makes 5 gallons of finished Gravy. Prices and other pertinent data on Vegex Rat Bait may be had by writing the company.

ANIMAL ODORS AS REPELLENTS AND ATTRACTANTS

Incorporation of the glandular extraction of the skunk into commercial repellents to add to their potency and efficacy is discussed in an interesting article, entitled "The Odor of an Enemy, the Cat, Frightens Mice Away," by Charles V. Sparhawk. In it he also discusses the use of a small quantity of a muskrat bait in the form of a gland as a powerful attraction to any creature that feeds on meat, such as mosquitoes, flies, ticks, lice, rats and mice, etc.

WRITE PESTS—SPARHAWK.

NH DUST

Leaflet describes new organic insecticide compound which, it is stated, may be used where non-poisonous insecticides are mandatory. Effective against roaches, silverfish, ants, fleas, lice and many other common pests found in the home, industrial and food storage plants.

WRITE PESTS—POWELL.

METHYL BROMIDE

What it is; what it does; how to use it—all these questions apropos methyl bromide are covered in an instructive and informative brochure. Described are dosage schedule for various type pests, methods of application and preliminary precautionary measures.

WRITE PESTS—Westvaco.

Business Opportunities
(Classified)

RATES — For individuals seeking employment, 5c per word, minimum $1.00. All others 10c per word, minimum, $2.00. All advertisements must be in the hands of the publishers seven days before publication date and must be accompanied by cash or money order for payment in full. The publishers are not responsible for any false or misleading advertisements.

Replies to advertisements where box number only is indicated should be addressed c/o PESTS, 1200 Oak St., Kansas City 6, Mo., giving box number as well.

FOR SALE—Established fumigating and exterminating business. Fully equipped. In Ohio. Excellent reputation. Can stand a rigid investigation. Reply to Box 7, c/o PESTS.

MANAGER, SALESMAN, thorough knowledge exterminating, fumigating, termite control business. Manage New England and New York territories for large, reputable firm. $4,000 per year, plus percentage of business. Steady income assured. Write full qualifications, experience, age. All letters held in strictest confidence. BOX 389.

New Treatment of Posts, Poles With Chemicals in Sap Stream

Scientists of the U. S. Department of Agriculture have developed a method by which farmers and other users of wood-lot trees can introduce chemicals into the sap stream of the wood to increase the length of service of fence posts, bean poles, garden stakes, and other utility poles.

The method is neither difficult nor expensive to use. The fresh-cut saplings are simply allowed to stand in a wooden tub or trough containing the right amount of chemical in solution for a period of about six hours or until they have taken up the required amount of chemical.

Chemicals recommended include chromated zinc chloride, zinc chloride, and copper sulfate (bluestone), of which the chromated zinc chloride is the best. . . . One pound of either of the chemicals dissolved in a half gallon of water will treat one cubic foot of wood, or the equivalent of a sapling which measures about four inches at the base and is about 30 feet tall. . . .

The scientists warn that all of the recommended chemicals are poisonous and should be kept out of the reach of children, pets, and livestock. None of them should be stored in metal containers. Because copper sulfate is corrosive, it must not be used in metal tubs or troughs.

Monsanto to Sell DDT as "Santobane"

Monsanto Chemical Company has announced that in the future it will sell dichloro-diplenyltrichloroethane, powerful insecticide popularly known as DDT, under the trade name of Santobane.

Volume production of the insecticide was begun by Monsanto last September, with virtually the entire output going to meet military requirements. Monsanto indicated that it sees important peacetime possibilities in the product as an insecticide.

Robert M. Sanford, manufacturing superintendent of Monsanto Chemical Company's plant at Monsanto, Ill., died of heart disease in Barnes Hospital, after a short illness.

Entered Monsanto's service as a control chemist at the Monsanto, Ill., plant in 1917. He was manufacturing superintendent of organic departments.

He was a member of the American Chemical Society, the American Institute of Chemical Engineers and was active in Boy Scout work at Webster Groves, Mo., where he resided with his family.

BEDBUGS AND COURT PUT BEE ON PAROLE BOARD'S POLICIES—If a man's room is infested with cimex lectularius, he is entitled to move without being sent to prison, Judge Elwyn R. Shaw asserted yesterday in federal District court, where Russell Gray, 42, a convict at Joliet penitentiary, appeared to ask a writ of habeas corpus.

Gray told the court that he was sentenced from Eureka, Woodford county, in 1935 to a one year to life term when he pleaded guilty to a charge of looting a farm house of $40.

He was paroled June 24, 1939, and returned as a parole violator March 13, 1942. He was paroled again July 30, 1943, and sent back to prison for violating his parole Oct. 18 of that year.

He was sent back the first time, he told the court, because he moved out of his bedbug infested room without sanction of the parole board.

"I'll continue this case until Feb. 28 to give the parole board a chance to perform its lawful duty," the court said. "Or, if the petitioner's request is denied by the state courts, he may bring his cause back here."

DDT percentages evidently are not being increased in the aerosol, and the Army authorities continue to depend on pyrethrum as the knockdown ingredient in fly and mosquito repellents, with sesame oil as synergist and Freon-12 gas as the carrier. Yet, dichloro-diphenyltrichloroethane has been shown to increase the effectiveness of the formula considerably. The war has also stimulated the quest for pyrethrum substitutes with insecticidal values in flysprays. Between January 1938 and June 1941 more than 1,300 compounds were mentioned in almost 80 patents issued during that period as possible substitutes for pyrethrum in household and livestock flysprays.

New Organic Products

Some of the compounds which have been marketed in place of pyrethrum for this purpose are in the group of aliphatic thiocyanates, an example of which is isobornyl thiocyanoacetate. Among the derivative possibilities are aniline, acetamide, benzoic acid, ethane, ethanol, ether, and other materials.

Progress is not an accident but a necessity. It is a part of nature.

—Herbert Spencer.

STANLEY'S PATENTED PIGEON-PROOFING

Economically, Permanently, Positively and **Lawfully** from any type of structure.

Stanley's Roofing & Building Service, Inc.

523 West 184th St. New York, N. Y.

Telephone: WAdsworth 7-3300-1

Advantage of low dosage fumigation at frequent intervals—warehouses and factories—is discussed in this bulletin. Inadvisability of fumigating cold houses also reviewed.
WRITE PESTS—AC-90.

FUMIGATION SAFETY RULES

Bulletin discusses fumigation safety rules with respect to mattresses, pillows, bedding, clothing and bedroom rugs, etc.
WRITE PESTS—AC No. 79.

ALABAMA OPERATES STATE-WIDE RAT CONTROL PROGRAM TO STOP SPREAD OF TYPHUS FEVER

An article written by Dr. Andrew J. Perollo, State Director of Typhus Control of the State of Alabama which describes the State's program for stopping the spread of typhus fever.
WRITE PESTS—AC.

Hydrocyanic Acid Poisoning—Skin Absorption

Bulletin discusses some pertinent safety suggestions with respect to avoidance of hydrocyanic acid poisoning through skin absorption.
WRITE PESTS—A-C-74.

CONTINUOUS INTIMATE BLENDING

A bulletin on the intimate blending of fine chemical, food and insecticide powders has recently been issued by Sprout, Waldron & Company, Manufacturing Engineers. In addition to a description of Blending Systems designed for continuous, automatic operation, there is a page of photographs which show the difference between intimate blending and conventional mixing as revealed by typical spatula tests. Copies of this 8-page bulletin in two colors may be obtained from PESTS—SPROUT.

REMOVAL OF PHOTOGRAPHIC FILMS AND PAPERS BEFORE FUMIGATION

is the title of an interesting and informative Bulletin which discusses the effects of hydrocyanic acid vapors upon unexposed photographic film. Other subjects discussed are: "High Temperature Necessary for Winter Fumigation"; "The Rat Menace—An Opportunity to Cooperate."
WRITE PESTS—A-C-88.

INSECT COLLECTIONS

Booklet describes pocket display case which may slip easily into a coat pocket making it of value for salesmen or others who travel about. Life history collections of structural type pests are also available for the PCO.
WRITE PESTS—WARD'S.

EFFECT OF HYDROCYANIC ACID ON FOODSTUFFS

This bulletin answers some highly interesting questions as to the effect of HCN on foodstuffs.
WRITE PESTS—A-C 89.

THALLIUM PRODUCTS

Circular calls attention to ant traps and jelly bait for control of ants—house or garden; mice seeds, rat paste, etc.
WRITE PESTS—NOTT.

RESPIRATOR

Bulletin discusses "Clear-Vue" model Dustfoe Respirator, which it is stated is durable, odorless, noncorrosive and a non-conductor of electricity and heat and gives a proved protection against toxic dusts.
WRITE PESTS—DUSTFOE.

HYDROCYANIC GAS MASK

Bulletin describes Hydrocyanic gas mask with all-vision facepiece.
WRITE PESTS—MINE.

NEW PERFUMING PRINCIPLE FOR INSECT SPRAY TOXIC AGENTS

Perfume Oil Fruit Berry MM&R is called the first new and different neutralizer-perfume in a decade, by Magnus, Mabee & Reynard, Inc., New York essential oil house.

Perfume Oil Fruit Berry MM&R not only neutralizes the odor of toxic agents, but imparts a truly refreshing fragrance of uncommonly light character. It has a definite fruity scent. A remarkable feature is that it has so light a fragrance, yet has the hiding power to give lasting coverage of heavy odors. This feature will be of particular interest for sprays used in food plants, bakeries, etc.

Fragrance of sprays, up to now one of the unmentionables of insect toxicants, now becomes an asset instead of a liability. Samples may be had by writing PESTS—MABEE.

WIZO RAT GLUE BOARDS

Eliminate Use of Poison!
Require No Bait!

A practical and economical way to rid buildings of rodent pests! No hazards of poisoned bait . . . or of decomposition! Easy to prepare! Just place WIZO Rat Boards near rat hole or form a runway next to walls. Fasten boards to floor to prevent pulling away. Rodents are caught firmly the moment they step on the boards.

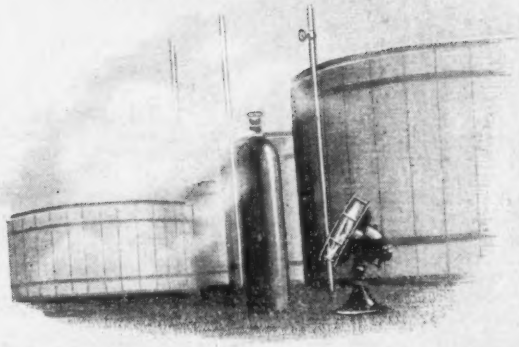
WIZO RAT GLUE can be obtained in quantities for preparing your own boards. Write for complete particulars.

ELKAY PRODUCTS CO.
373 27 West 116th St. New York, N. Y.

Case History*

ROACH CONTROL IN DAIRY PLANTS

Dow Methyl Bromide Put an End to His Roach Problem



*Actual record is on file at The Dow Chemical Company

A midwestern dairy plant suffering from an infestation of roaches was confronted with the problem of performing an effective fumigation without interfering with normal daytime operation. An industrial fumigator, acquainted with the outstanding reputation of Dow Methyl Bromide, accomplished this difficult task by proceeding under the following plan:

Preparation of Building: Building carefully sealed while plant was operating. Later, boiler fire was extinguished and draft doors sealed to prevent leakage.

Dosage and Exposure Period: 1½ pounds of Methyl Bromide per 1,000 cubic feet for eight-hour period (no skippers were present or two pounds would have been used).

Method of Application: Methyl Bromide released from cylinders and circulated by fans.

Aeration Period: One hour with fans operating. (Not being water soluble, Methyl Bromide is quickly expelled despite moisture.)

Results: Entomologist's check revealed no insect life. Plant resumed operation following day.

Particularly difficult fumigation problems can often be solved by using Dow Methyl Bromide. If you are confronted with such a job, why not write us for information on how to handle it.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit • Chicago • St. Louis
Houston • San Francisco • Los Angeles • Seattle

The penetrating fumigant

Methyl Bromide

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

PLAN TO REPEL THAT SPRING INVASION NOW!

An invading army is converging on all objectives. The attack may be expected at any moment. All resources for defense must be massed against the enemy. Plans must be made AT ONCE to repel this certain invasion.

Check your stocks of HI-TOX, MORTICIDE, SUPER-MORTICIDE, MORTOLIN, ASSCO ROACH POWDER and POWDERED FORTIFIED RED SQUILLS. You will avoid disappointment and consequent operational loss by ordering your SPRING requirements NOW!—You should have at least a sixty day supply of all our products on hand at all times to protect yourself against transportation delays.

If you are still unacquainted with our products, write our office nearest you for samples and data.

Associated Chemists, Inc.

1906 N. HALSTED STREET
CHICAGO 14, ILLINOIS

EASTERN OFFICE: Velsor Wright Company, 8 West 40th St., New York 18, N. Y.
TEXAS OFFICE: The Carroll Company, 1323 Wall Street, Dallas, Texas
STOCK Now Available in NEW YORK—Phone or Write Eastern Office